ST NEWS
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FEBRUARY 1987 VOLUME 5, NUMBER 10

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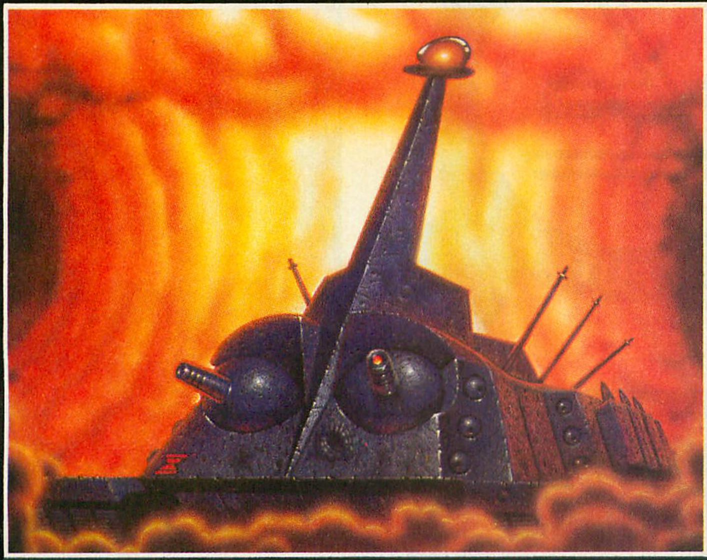
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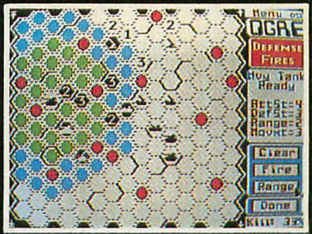
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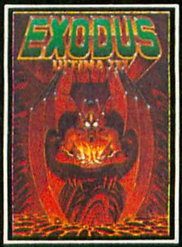
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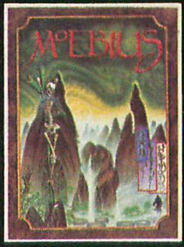
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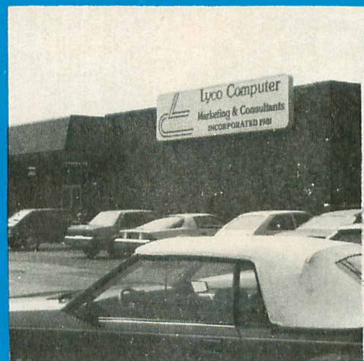
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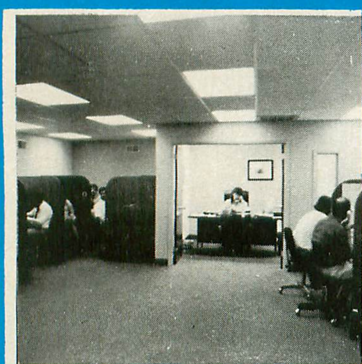
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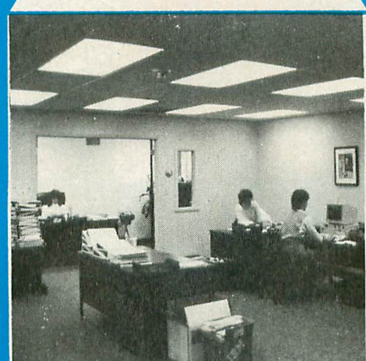
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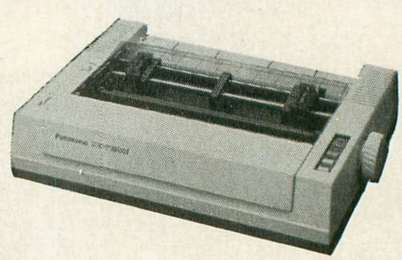


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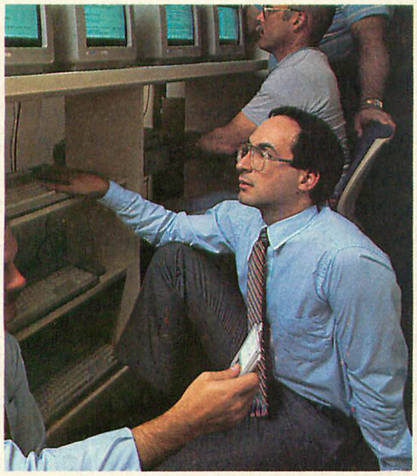
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Antic

The ATARI® Resource

Wilkinson on 130XE RAM Page 35

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Antic—The Atari Resource is published twelve times per year by Antic Publishing. Editorial offices are located 544 Second Street, San Francisco, CA 94107. ISSN 0745-2527. Second Class Postage paid at San Francisco, California and additional mailing offices. POSTMASTER: Send address change to **Antic**, P.O. Box 1919, Marion, OH 43306.

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February 1987, Volume 5, Number 10

Subscriptions: One year (12 issues) $28. Canada and Mexico add $8, other foreign add $12. Action Edition (12 issues with disks) $99.95, all foreign add $25. (California residents add 6½% sales tax for disk subscriptions.

Editorial submissions should include text and program listings on disk and paper. Submissions will be returned if stamped, self-addressed mailer is supplied. **Antic** assumes no responsibility for unsolicited editorial material.

Editorial

8-Bit "Vs." ST?

It's clear that right now the issue of greatest concern to **Antic** readers is the relative coverage of ST and 8-bit Ataris in these pages—especially now that Antic Publishing has begun issuing **START: The ST Quarterly.**

In our July, 1986 "Best Of Both Worlds" statement, Publisher James Capparell pledged to "devote a minimum of 60 to 70 percent of each issue's editorial space to material for 8-bit owners" while "the rest of the editorial pages will carry timely and useful ST material."

During the following eight months, we have been serious about living up to this pledge. We are pleased that the previous torrent of worried "8-bit vs. ST" letters has slowed down to a steady trickle. But this whole controversy is obviously still very much on the minds of many **Antic** readers and now seems to be a good time to clear the air again.

Naturally, any new editorial policy needs time for fine-tuning. But we think that the evidence of the past eight months shows conclusively that a mixed 8-bit and ST magazine is still the best way for **Antic** to serve the needs of the majority of our readers.

Presently, **START** offers in-depth material for serious ST programmers *and* power-users of commercial ST software *four times yearly.* The monthly **Antic** is, by definition, much more timely—and it has many more pages available over the course of a year. Because of its timeliness, the **Antic** ST Resource section features the most current reviews of significant ST products along with advance information about virtually all major upcoming ST products.

At the same time, **Antic** seeks to extend to the ST our successful five-year format of providing committed Atari hobbyists with useful and powerful type-in programs. From all our reader surveys and mail, we have learned that the first priority of **Antic** readers is to find out "how to do things better" with their computers—primarily in BASIC and secondarily in assembly language.

One way we now try to maximize the benefits of this format for *all* Atari owners is to consider whether programs we publish can be adapted to both 8-bit and ST computers. We've been able to do this at least once in every recent issue. This month, for example, *San Francisco Fogger* demonstrates how a dual 8-bit/ST program article uses costly editorial pages with top efficiency—enabling us to apply the conserved space for additional Atari coverage.

Also, **Antic** is now making sure to review all "universal" peripherals—such as printers, modems, hard disks, etc.—simultaneously for the 8-bit and ST. This can often provide unique additional insights. For instance, our December, 1986 review of the two new Atari dot-matrix printers pointed out that 8-bit users who own an 850-type interface would actually get a better deal with the identically-priced, but faster and more full-featured, SMM-804 ST version.

Antic Magazine published considerably more editorial pages during the past 12 months than we did during the previous year. In fact, the **Antic** you are holding is more than 40 pages bigger than the February 1985 issue. This increase is made possible because of advertising support from *both* 8-bit and ST suppliers.

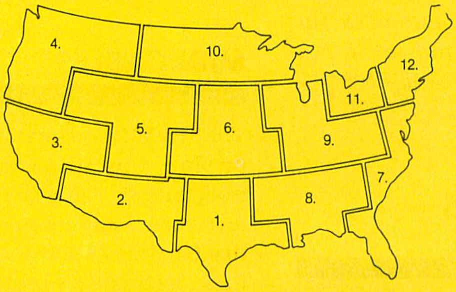
The bottom line is that we believe an international monthly magazine like **Antic** today cannot do as good a job of supporting Atari 8-bit computer users *or* ST users, if it doesn't support both.

Nat Friedland

Nat Friedland
Editor, Antic

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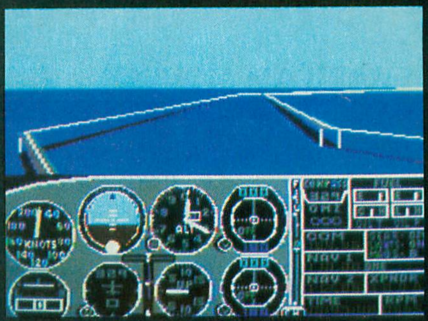


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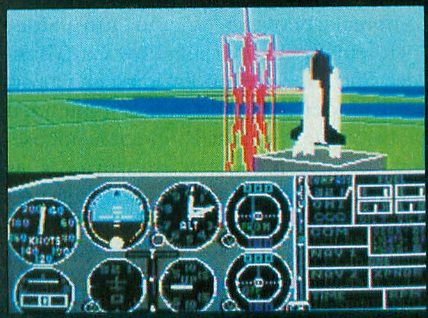
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V-GRAPH

I enjoyed V-Graph (**Antic**, November 1986), but it didn't work immediately with my AtariWriter. Tell your readers to:

1. Erase the printer controls in the "heading" line.
2. Put the last digit of your data in column 9.
3. Put a [RETURN] in column 10.

If someone modifies V-Graph to include a variable x-axis, please let me know.

Karl Wilks
Richmond, CA

SMARTEAM MOVES

The service center for the SmarTeam modem has moved to: 19205 Parthenia, Suite J, Northridge, CA 91324. (818) 886-9726. SmarTeam honors a two-year warranty on modems with a dated sales receipt.—ANTIC ED

THUNDER! REPLIES

I'd like to point out some misconceptions in Steven DiMeo's review of Thunder! (**Antic**, November 1986). He felt that only 200 words in a supplementary dictionary is a drawback because he would like to include contractions. But that's why the user can add *thousands* of words to the *main* dictionary.

Also, the concept of "memory-resident program" should be cleared up. Once the machine is booted with the Thunder! accessory, it becomes memory-resident. The original disk is no longer used, so whether or not it fits on a disk with 1st Word is irrelevant.

Thunder! is primarily a spell-checker—so why complain that it can't tell the difference between "to" and "too"? Since neither is spelled wrong, how can Thunder! find an error? Proofreading isn't a part of Thunder!'s domain, nor is it intended to be. Suggesting that Thunder! is not useful because it's not a thesaurus is as meaningful as saying that a car isn't useful because it's not a boat.

The restriction of ignoring only 20 repeated words has been dropped as of version 1.3. Owners of earlier Thunder versions can upgrade to 1.31 free by sending their original disks to us.

Mark Skapinker
Author of Thunder!
Batteries Included

GARBAGE

I have an 800XL, a 1050 disk drive, a U-Print Model A interface, a Star NX-10 printer and an XM301 modem. With the modem connected, I get the occasional line of garbage printed out. If I disconnect the modem, the printer works fine. Here's a sample of the garbage: @WNe@WNe. What can I do?

Ron Feulner
North Charleston, SC

We tried using all of the above components together—except that we don't have a U-Print interface—and had no trouble. You might try borrowing another interface (Atari 850, P:R: Connection, etc.) at a users group meeting and see if that makes a difference. @WNe@WNe.
—ANTIC ED

ALPHA PRODUCTS

Alpha Products Inc. assures ***Antic*** *that it currently sells ST monitor connectors and cables, despite contrary information in the October 1986 I/O Board. Alpha is at 5740 Corsa Avenue, # 104, Westlake Village, CA 91362. (818) 889-9304.*
—ANTIC ED

ARSON DB

I'm a special agent for the United States Treasury, specializing in cases of criminal bombing and arson for profit. We plan to use a customized database to compare suspects, methods of operation, victims, types of devices, etc., to help solve our investigations and identify arsonists, bombers and their potential targets and to cross-reference vehicles and telephone numbers to identify those who contract out for the "jobs."

As we know of no other law enforcement agency doing a computer program like this, we must design the database from scratch. Some big city fire departments use databases to keep track of arsons or fires in general, but they don't, to our knowledge, use them for both historical and prediction work.

David Grace
Pittsburgh, PA

WEFAX VALUES

In attempting to build the WEFAX interface (**Antic**, September 1986), I noticed that the values for C1 and C2 were omitted.

Robert Franke
Bristol, WI

The comma after C2 in the parts list indicates that C1 to C4 all use capacitors .1uF, #272-1069.—ANTIC ED

MIDI CABLES

The ST's MIDI-out port has MIDI-through on pin 3. Most MIDI sequencers and controllers don't. This won't be a problem unless you're using inexpensive MIDI cables that have pins 3 and 5 soldered together. Casio keyboards are unaffected by this, but Yamaha keyboards take exception to it. If you're having trouble, you can either replace your cables or remove the solder connection between pins 3 and 5 on both ends of your cables. Credit for this fix should go to Malcom Cecil of Electronic Music Publishing House.

Marcel Van Someren
Los Angeles, CA

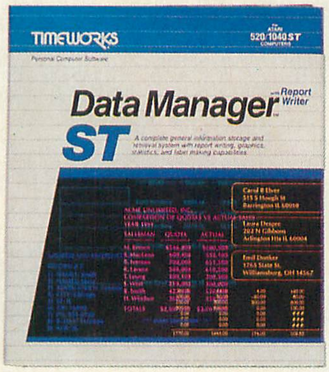
Antic *welcomes your feedback, but we regret that the large volume of mail makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish I/O answers to questions that are meaningful to a substantial number of readers.*

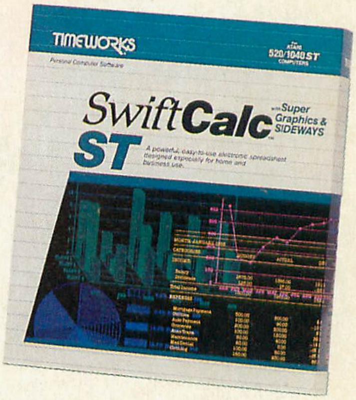
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Christine Walker

Game of the Month

Qua

BY JEREMY BIRN

Quatro is a colorful computerized version of Blind Man's Morris, the traditional strategy game where you beat an opponent by lining up four pieces in any direction. Compete against your Atari or a human player. This short BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.

Quatro is a slick computer adaptation of Blind Man's Morris or "Connect-4," the popular strategy game where you compete to line up four squares of your color—horizontally, vertically, or diagonally. You can challenge either your Atari (a truly formidable player) or a human opponent.

Type in Listing 1, QUATRO.BAS, check it with TYPO II and SAVE a copy before you RUN it.

SPECIAL INSTRUCTIONS

After you SAVE a corrected, complete version of Quatro, you need to follow the special instructions below:

These special instructions are nec-

tro

essary because Quatro is one of those BASIC programs that will not RUN properly if the lines weren't typed perfectly and in the proper order. But the following sequence of LIST, NEW, ENTER and SAVE commands prevents this problem. (*For a more detailed explanation of the phenomenon, read about Variable Name Tables in* Your Atari Computer *by Lon Poole, $17.95, Osborne/McGraw-Hill, Berkeley, CA.* —ANTIC ED)

1. LIST the program to disk or cassette. Be sure the TYPO II program has been removed before you do this.
2. Type NEW.
3. ENTER the program back into the computer.
4. SAVE the program to disk or cassette with the SAVE command.

When you RUN Quatro, first you'll see the title displayed while six different-colored horizontal "tracks" are drawn on the screen. (Don't worry, Quatro works with monochrome or black-and-white screens too.)

STICK OR COMPUTER

Black and White, the text lines at the bottom of the screen, let you choose the color used by each player, and whether you or your Atari control each color. Move the joystick up and down to switch between Black (player 1) and White (player 2).

Now, move the joystick from side to side to choose who controls each player. You may pick from Stick 1, Stick 2, the Computer, or Random moves.

For example, to play a game against a friend and use two joysticks, one line should be Stick 1 and the other should be Stick 2. To play against yourself (or a second person) using only one joystick, set both Black and White to Stick 1. You can also play against the computer, or have your Atari play against itself.

When you set Black or White to Computer mode, Quatro will use a challenging "artificial intelligence" routine to select the best possible move against you. Quatro bases its choice on the current state of the game board, the relative advantages of each legal move, and any negative implications such a move might present.

Pit your Atari against itself for an exciting demonstration of these routines. Just set both Black and White lines to Computer.

Quatro also has a random mode, in which the computer randomly chooses its move from all legal moves. The advantage here is that your Atari is easy for you to beat in this mode.

HOW TO PLAY

After you establish who's playing who, press the joystick trigger or the [START] key to begin playing. The bottom of the screen shows the move number and whose turn it is.

When the game calls for Stick 1 or Stick 2, move the appropriate joystick up or down to control a flashing yellow stripe. Place the stripe in the center of a track and press the joystick trigger. A square in your color will appear at the far right end of that track.

Succeeding squares in that track will always appear in the rightmost empty position of the track, until the track is filled. If all six tracks are filled without anyone forming a row of four, the game is tied. You can abort a game anytime by holding down the [SELECT] key.

BEAT YOUR ATARI

After your Atari randomly choses a first move, it will take a few seconds to look at each legal move. One way to beat the computer is to set up two possible winning tracks. The computer can block only one of them, so you can win in the other. Another way is to set up a track where you *could* win, but if the computer blocks you, you could also win in the space made available to the left of the computer's block.

No single pattern always works. To learn more about how your Atari plays, watch it compete against itself in various combinations of Computer and Random modes. You can learn a lot about the patterns of the game itself by watching Random vs. Random.

PROGRAM TAKE-APART

Quatro uses a modified Graphics 7 screen. Instead of changing the color of the whole background at once, as with a SETCOLOR command, the background color of each text or graphics stripe is set independently through a modified display list.

Throughout the program, a Display List Interrupt (DLI) updates the color of each stripe, one at a time. The DLI gets the appropriate color values from a lookup table which begins at the memory location contained in the variable SET. By POKEing different values into this table, the program can draw multicolored stripes in the background and highlight a text stripe to show whose turn it is.

The DLI routines occupy lines 30000 to 31000. Advanced programmers may wish to use this stand-alone subroutine in their other programs—which would call the routine with a GOSUB 30000 statement.

This DLI routine occupies the low part of Page Six and is compatible with most graphics modes. It will also work with many modified display lists.

You can now independently set the color of each stripe by using the command POKE SET+Y,COLOR. In this command, Y is the row number (the top row is row zero), and COLOR is the appropriate POKE value of the color to be used.

continued on next page

Line up 4 squares before your Atari does

By default, these colors will be put into color registers two and four. This colors the background of both graphics and text. To use other color registers, POKE CA and CB with the appropriate register number, printed below. (See line 70 for an example of this technique.) If you only want to control one register, set both CA and CB to the same register number.

The codes for the registers are:

18-21 Player/Missile Colors
22 Register 0 (Default Yellow)
23 Register 1 (Default Green)
24 Register 2 (Default Blue)
25 Register 3 (Default Red)
26 Register 4 (Default Black)

This routine is shorter, easier to use and more flexible than a "preset" DLI in most situations. In fact, to achieve the same effects, you would usually need a chain of several DLIs.

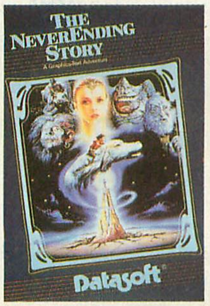
Jeremy Birn is a student from Delmar, New York and Quatro is his first publication in **Antic**.

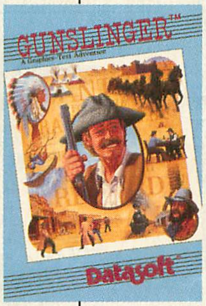
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LOYALTY PAYS



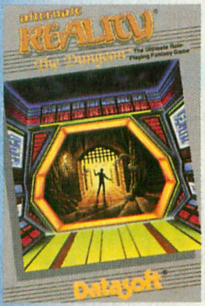
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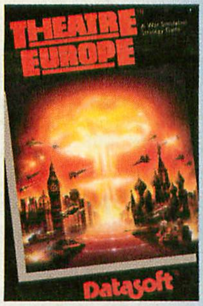
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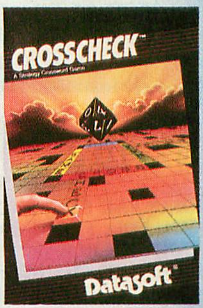
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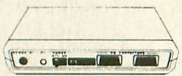
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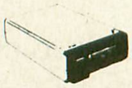
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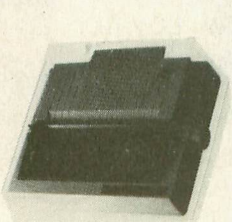
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How To Write Books With Your Atari

by DAVID WADE, Author of 15 published novels

"It's great! I love it," gushed the movie producer, "but do you think you could change the ending back to the way you first wrote it? And maybe add in your other idea for the opening?"

Could I do that? Sure, I could—but I was smiling through gritted teeth.

Eighteen months ago, on the strength of my involvement in the best-selling paperback action series *The Executioner*, I had been asked to prepare a treatment for a tough-guy action movie. A treatment is the first version of a film script, rather like a very long short story. This latest draft ran to 90 pages, and the revisions the producer wanted were the fourth set of changes he'd asked for in as many weeks. It meant another round of cutting, pasting, rewriting and *then* retyping this whole new draft from scratch.

Even to a computerphobe like me, it was now obvious that I needed a word processor. I went looking for a computer that (a) cost less than the down payment on a large house, (b) had a wide range of software applications and games, (c) and didn't require an advanced degree in computer science to operate it.



Today my cluttered office includes an 130XE, an 800XL (picked up on sale as a back-up computer), a 1030 modem, a single 1050 drive, both amber and color NEC monitors, and a Roland PR-1011 printer. There's also a raft of software. I seem to be collecting word processors even faster that I accumulated typewriters during my years B.C. (before computing). I now own AtariWriter and AtariWriter Plus, HomeWord, Word Magic, G.T. Estate WP—and my favorite workhorse, PaperClip.

This system handles my correspondence, accounts, and a schedule (when I remember to update it). I used the Atari to write a film treatment, two long speeches, my lectures as writer-in-residence at Lynchburg College in Virginia, several magazine articles (including this one) and a couple of short thrillers. Right now I'm two-thirds of the way through a 600-page epic about the French Foreign Legion —*Seven Flames*, to be published by Arrow Books, London.

Oh yes, I've also had hours of fun chasing round Castle Wolfenstein and trying to force Colossus Chess to resign.

You can attempt even quite ambitious writing projects with a modest computer setup. Don't put off writing that sword-and-sorcery saga or grand space epic just because you don't yet have a hard disk, mouse, and real-time thesaurus. Boot up your word processor, slip a fresh disk in the drive, and go for it!

YOUR NOVEL

Let's pretend that we're writing a popular novel together and I'll take you through the process step by step.

You have decided to tell an entertaining yarn about two young fliers who went over to France during World War I to join the famous Lafayette Escadrille, and maybe they meet a nurse over there and both fall in love with her. Hey, this is beginning to sound like a proper story already!—we'll call it *Where Eagles Fly*.

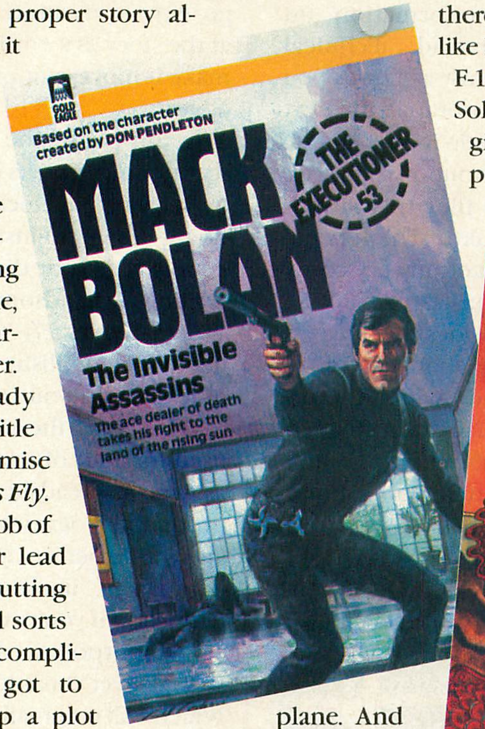
Every story starts with an idea. It might be a smashing opening, a surprising twist for the finale, a memorable character, or whatever. Well, we've already got a working title and the basic premise for *Where Eagles Fly*. Now comes the job of fleshing out our lead characters and putting them through all sorts of conflicts and complications. We've got to start building up a plot outline.

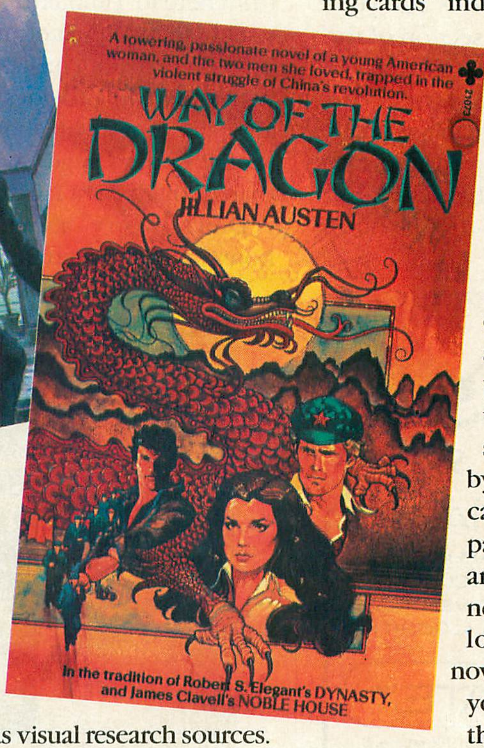
If you've got an outliner or "idea processor," that's great! If not, you can always use your word processor. Sure, you won't have the same versatility for grabbing topics, hiding text, and so on, but through judicious use of your tab settings and block moves you can create the initial outline on most word processors.

Concurrently with this plot development, you must also begin your research. Some of this will require manual note-taking and photocopying—Atari doesn't have a laptop which we can take into the library! Use "card index" software or a simple database to build up a bibliography of the books you've checked and the ones you still want to get hold of. Add notes of the relevant material and page numbers.

At this point you can open up some word processing files to keep lists of potential names, both for characters and places (you'll be surprised how many names you use up in the course of a book). And develop profiles of all the leading characters.

Some of you might be lucky enough to cadge a flight on a real biplane, or visit with enthusiasts who have collected memorabilia of WWI aviation. Anyway, there's always software like Flight Simulator II, F-15 Strike Eagle and Solo Flight which will give you a flavor of piloting a small plane. And don't overlook videotaped movies such as "Wings", "The Blue Max," and "Aces High" as visual research sources.





You'll be gathering details on words and expressions used at the time, notes on what people wore, what they ate, descriptions of places, specifications of planes and weapons, tactics used in aerial warfare and the general historical overview. All this information must be broken down into workable database or WP file entries.

As the research accumulates, it will give you fresh ideas for the plot and cause you to revise earlier developments. And, as the plotline evolves, you'll find out where you still need to do more detective work. By now, on carefully indexed and backed-up disks, you're beginning to build up the files you'll need for the actual exercise of storytelling.

RESEARCH PACKAGES

You should now have a reasonably detailed plot outline, the names and imaginary biographies of all your principal characters, details on the places, the units, the planes, the history of early air warfare, and so on.

Some material like maps, actual newspaper clippings, photos and diagrams will remain in their original form or as photocopies. But much of the material will now exist as dozens, probably hundreds, of electronic "filing cards" indexed by topics such as Locales, Ranks & Uniforms, Jargon & Slang and so on. *Where Eagles Fly* is beginning to take shape.

Next, this whole mass of information needs to be broken down and resorted in story order. Following your plot outline—which at this point should be in a chapter-by-chapter format—you can examine each small package of research data and decide where it's needed in the chronological order of the novel itself. In some cases, you'll want to duplicate the entries.

If you have a database which is compatible with your word processor, you can transfer your reorganized research directly into WP files. If not, you can print it out and work from the hard copy.

Does all this spadework sound rather tedious? It really isn't—often it's the most fun part! But now you're about to discover why it'll save you a lot of wasted time and heartbreak... Believe it or not, you're ready to start the rough draft of *Where*

continued on next page

Eagles Fly.

With a sheaf of maps, photos and hard copy data printed out in story order sitting at the side of your desk, turn on the word processor and begin to juggle around with the opening sentence. You still can't do that? Skip it—you'll come back later—and plunge right into the second paragraph.

Here's why I use PaperClip—it has the vitally important function of dual text windows. That is, it'll handle two files at once (So does the new First XLEnt Word Processor, which I'm looking forward to adding to my collection.)

Keep a "working disk" in your drive which contains a customized version of your word processor, complete with special macros for your novel, the appropriate section of the outline, and short separate files on the major characters and research. This still leaves enough room to automatically save the draft as you create it. Finished chapters or sub-sections can be saved and *backed-up* on other clearly labelled disks.

If your word processor doesn't have an autosave function, it's all the more important to make back-ups as you go along! If you don't have split screen capability, then all the research material will have to exist in hard copy form right next to your keyboard. With PaperClip, I call up the outline or chronological research notes on the bottom screen, while I begin to tell the story on the top screen.

There is no longer any excuse for not getting on with your big writing project. All the information on characters, background, technical stuff, etc., appears just as fast as you can move the cursor or load the next file. All you need to do is concentrate on what's right in front of your eyes!

You don't need files that stretch from here to Timbuktu. They are unwieldy to manipulate and very costly if you ever make a mistake. An 800XL with PaperClip provides a very workable file length of about 19 or 20 double-spaced pages, which is more than enough for a fair-sized chapter.

Don't worry about the whole house, just concentrate on the building blocks. Those chapters will keep on piling up, even as you focus your attention simply on the section at hand, and pretty soon you'll realize you've completed a first draft. Now the real job of writing begins.

SPELLING CHECKERS

Spelling checkers are dandy tools for picking out all your inadvertent typos as well as genuine spelling errors. Check each chapter carefully—cutting, revising, and polishing as you go. Now you can step back and look at the story as a whole. Tighten it up, make it move, smooth out the rough edges.

In this phase, the word processor really comes into its own. Everything from trying out block moves and "undoing" them, to instantaneous word counts is at your disposal during rewriting. A handsome manuscript of *Where Eagles Fly* will be ready to make the publishing rounds a lot quicker than you might think.

Of course, the computer can be used for a lot of administrative tasks as well. A spreadsheet can chart your production logistics, or keep track of all your expenses. (Don't forget, the equipment itself becomes a tax deduction if you're using it for professional purposes.) And, finally, the spreadsheet can add all the royalties which will eventually come rolling in.

Yes, it would be a little easier with a 20Mb hard disk, online thesaurus, and built-in style checker. The system I've outlined for you here could be enhanced. But to say you can't possibly get going on your own project (and *Where Eagles Fly* can be adapted just as easily to a Viking swashbuckler or an industrial espionage thriller, etc.) without all the very latest gizmos is the high-tech version of "sharpening pencils" to keep from doing any real writing.

I know that commercial books can be written on the Atari. I've done it. And so can you!

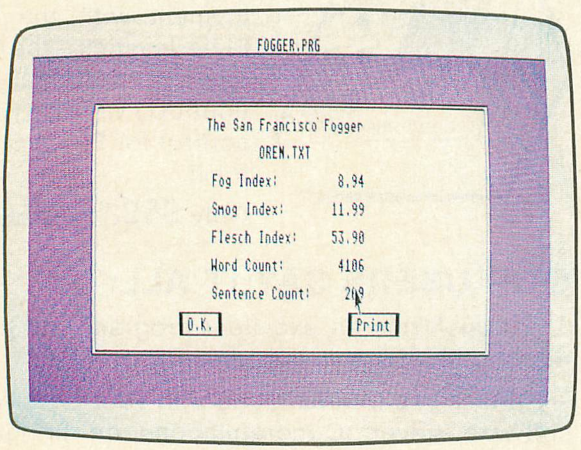
David Wade has written more than 15 paperback novels, under almost as many pen names (from "Diane Hunter" to 'Alan Bomack"), with combined sales of over a million copies.

The San Francisco Fogger

Rate your writing-with 8-bit or ST

BY CHARLES JACKSON, ANTIC TECHNICAL EDITOR

Sometimes, *what* you write isn't nearly as important as the *way* you write it. Consider, for example, an introductory BASIC tutorial which can only be understood by advanced BASIC programmers. Such a tutorial is useless to both groups of people. Now, your Atari can help.



Since the early 1930s, writers have been constructing *readability formulas* to gauge the clarity of their writing. Robert Gunning's Fog Index, introduced in 1968, is one of the best-known. A newer variation of the Fog Index is G.H. McLaughlin's Smog Index, developed in 1980.

Check the readability of your letters, reports and term papers. The San Francisco Fogger analyzes your text files and measures the clarity of your writing. We've provided both ST and 8-bit versions of the program. The 8-bit version of the program works on Atari computers with at least 32K memory, disk or cassette.

The Fog and Smog Indexes are mathematical formulas that estimate the number of years of schooling a person needs in order to read your writing easily. Most local newspapers, for example, are written at 8th-grade level, while the Wall Street Journal "fogs" in at about 12th grade.

In 1949, Dr. Rudolf Flesch introduced one of the first readability formulas. Flesch also developed formulas to measure the "human interest" of a text file. The Flesch Index yields a "reading ease" score between 0 (practically unreadable) and 100 (easy).

THE PROGRAM

The San Francisco Fogger, named for **Antic's** home town, analyzes any text file and determines its Fog Index—as well as its Smog Index and Flesch Score. Fogger also counts the number of sentences and words in your file.

8-Bit Users: Type in Listing 1, FOGGER.BAS, check it with TYPO II and SAVE a copy before you RUN it.

ST Users: Type in Listing 2, FOGGER.C, and compile it with Alcyon C or Megamax C. Antic Disk owners can

continued on next page



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CIRCLE 036 ON READER SERVICE CARD

transfer the FOGGER.PRG file over to their ST, following the instructions in the ST Help file on Side B of the monthly disk.

The San Francisco Fogger is easy to use. Just enter the name of your text file, and the Fogger does the rest. The Fogger is designed to handle standard ASCII text files! You should avoid using it with files containing printer control codes, or with compressed files. **Antic** has successfully used the Fogger on 8-bit text files created with PaperClip and Atariwriter Plus. On the ST, 1st Word works if files are *not* saved in "Word Processing" mode, and ST Writer works *only* with files that you print to disk.

HOW IT WORKS

Readability formulas usually rely on the average number of words in your sentences, the average number of syllables per word, and the average number of "difficult" words per sentence. Words with three or more syllables are considered difficult by most readability formulas.

The Fogger uses common algorithms to recognize words and sentences in a text file. A sentence is defined as a sequence of words ending in a period (or any other applicable punctuation mark). Words are sequences of letters or numbers not interrupted by a space. The Fogger also corrects for special cases such as "Mr." and "Jr."

The syllable-counting routines, however, are not so simple.

SYLLABLE COUNTING

Initially, the program counts each occurrence of a vowel followed by a non-vowel. The word "Sanctionable" has four such occurrences (S *an* cti *on* *ab* l *e*).

Next, the Fogger accounts for special cases, such as words with a "silent e."

When the Fogger finds a word with a silent e, it checks to see whether the total syllable count should be reduced. Words like "time," "tile" and "title" all have silent e's. When the Fogger finds such a word, it checks to see if the next-to-last letter is an L. Words which pass this second test, such as "tile" and "title", must go through a third test before the syllable count is correct.

In the third test, the Fogger checks to see if the letter before the L is either a vowel or an R, S, or L (as in quadrille). If the word passes the first two tests, but fails this one, we leave the syllable count alone. Otherwise, we subtract one to account for the silent e.

The Fogger also conducts a similar battery of tests on words which have patterns like es, ed, io, yi and ia. Because of limited publishing space, we could not include less-common patterns in the program.

Occasionally the Fogger will find a word which doesn't fit into any of these rules, and the syllable count will be somewhat inaccurate. Since all three readability formulas rely on *average* values, small inaccuracies in the overall syllable count will not affect the final Fog, Smog and Flesch values.

If you'd like to see the ST's syllable routines at work, hold down the [ALTERNATE] key while selecting (or double-clicking) the file to be processed. The Fogger will display each word in the file, along with the number of syllables in the word.

NUMBER-CRUNCHING

Once all of the syllables, words and sentences are counted, the Fogger calculates the Fog, Smog and Flesch Indexes. The formulas appear in the ST listing in the **number_crunch()** function.

By the way, this article has a Fog Index of 8.74, a Smog Index of 11.43 and a Flesch Score of 59.98.

Listing on page 98 Listing on page 100

RECOMMENDED BOOKS

The Art Of Readable Writing by Dr. Rudolf Flesch. Harper & Brothers Publishers, 1949.

Would You Put That In Writing? by Dianna Booher. Facts On File, 1983.

Writing Effective Business Letters, Memos, Proposals, & Reports by Samuel Cypert. Contemporary Books, 1983.

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Word Processors: 7 For The 8-Bit

Finally, a real choice

BY GREGG PEARLMAN, ANTIC JUNIOR EDITOR

Atari 8-bit computers are fine word processing tools. For $500 or less—the price of a computer, printer, disk drive, software and some paper—you can have clean, correction-free documents that make ordinary typewritten material look as if the cat did it. In terms of versatility, speed, ease of use and readability, word processing is as far above typewriting as typewriting is above penmanship.

An individual word processor is an acquired taste. Features that please some might annoy others. Even the five **Antic** editors are split on their favorites. For personal use, two prefer PaperClip, two use AtariWriter or AtariWriter Plus, and the fifth uses Letter Perfect.

What follows is a detailed comparison—including a features chart—of seven word processors currently available for Atari 8-bit computers. These word processors are AtariWriter Plus, First XLEnt Word Processor, PaperClip, Letter Perfect, Superscript, Word Magic and HomeText.

80 COLUMNS

The biggest lack in 8-bit Atari word processing to date has been the unavailability of an 80-column screen display that shows your page exactly as it will print out. However, Atari now says that its long-awaited XEP80 80-column adapter box will be shipping in January, 1987.

The XEP80's razor-sharp text display was demonstrated at last year's trade shows and Atari Fairs. The $79.95 adapter plugs into either joystick port and includes its own parallel printer interface. It works with either monochrome or color monitors.

Prompt release of new versions supporting 80 columns on the XEP80 are expected from AtariWriter Plus, PaperClip and First XLEnt Word Processor.

ACE80 ($49.95. Reviewed in **Antic**, July 1986) and Write80 ($59.95. Reviewed in October 1986) each offer 80-column displays without the XEP80 hardware. But neither of these products can be considered full-featured word processors like the other software in this report.

ATARIWRITER PLUS

AtariWriter Plus does many things well. Its Proofreader and Mail Merge functions make it one of the most complete word processing packages available for Atari 8-bit computers. AtariWriter Plus is powerful and versatile, it does not drop characters or lock up as you type, and it has a 36,000-word spell-checking dictionary.

The main limitation we found is a maximum file size of only 12.3K on the 800XL, slightly less than half of the file sizes we obtained from four other word processors. (See features chart.)

However, on the 130XE (and compatible memory upgrades) there are 15,872 bytes free—in each of three "banks." Files longer than 15.5K "spill over" into the next available bank. [START] [B] switches from one bank to another, and [OPTION] [F] evenly distributes the file among all three banks.

AtariWriter Plus can be configured to almost any printer. You need to load the printer driver every time time you boot up. The print preview feature gives you horizontal scrolling in more than 200 columns, and under-

WORD PROCESSOR	Atari-Writer+	First XLEnt	Paper-Clip	Letter Perfect	Super-script	Word Magic	Home-Text
Printer Driver Utility	Y	Y	Y	Y	Y	Y	Y
Copy-Protected	Y	N	Y	Y	Y	N	N
Max-XL File Size	12.3K	28.3K	25.0K	28.0K	15.2K	23.7K	6.5K
Auto-Backup	N	N	Y	N	N	N	N
Menu-Driven	Y	Y	N	Y	Y	Y	Y
Batch Printing	Y	Y	Y	Y	N	N	N
Undo Function	N	N	Y	N	N	N	N
Windows Per Screen	1	1	2	1	1	1	1
Horizontal Scrolling	Y	N	Y	N	N	N	N
Proportional Spacing	N	Y	Y	Y	N	N	N
Header/Footer Function	Y	Y	Y	Y	Y	Y	Y
Lines Per Header/Footer	2	1	3	1	2	1	2
Double Column Printing	Y	Y	Y	N	N	N	N
Embedded Printer Codes	Y	N	Y	Y	Y	Y	N
Mail Merge	Y	Y	Y	Y	Y	Y	Y
Reads Other WP Files	Y	Y	Y	N	Y	Y	Y
Spell-Checker	Y	N	*	Y	Y	**	N
Extra XE File Size	*** 46.5K		Uses RAM-disk	64.1K			

*Only with XE version.

**Spell Magic—which also works with files from other word processors

***15.5K in each of three memory banks.

lined characters appear in inverse video. However, boldface, italics and other special fonts are not indicated onscreen. The AtariWriter Plus Mail Merge lets you create an electronic mailing list with up to 255 records per file.

AtariWriter Plus's powerful search-and-replace lets you use question marks as "wild card" characters. And global substitution is almost instantaneous—you don't have to watch the cursor scroll through the entire file.

The Proofreader program takes a little while to load, but it quickly scans your file for anything unusual, at which time an obnoxious beep alerts you. [CONTROL] [B] from the main menu deactivates the alarm. You can correct the word, search the dictionary or keep that spelling. You can also create personal dictionaries of up to 8,400 bytes. (For example, 8,400 bytes would hold 1,200 words consisting of six letters and a space.)

While the **Antic** editorial staff has had no problems with AtariWriter Plus, this isn't entirely true of our readers. We have received a trickle of letters listing minor complaints. For example, apparently headers and footers are sometimes printed somewhere other than where you want them.



$49.95. Atari Corp., 1196 Borregas Avenue, Sunnyvale, CA 94086. (408) 745-2000. (Reviewed in **Antic**, April 1986, page 81.)

FIRST XLENT

First XLEnt Word Processor is the newest 8-bit product in this category and it is packed with unique and impressive features. First XLEnt lets you add pictures to the text, use the joystick for cursor movement, edit two documents at once, load in any Atari 8×8 font (such as international character sets). Help screens are easily available and search-and-replace is almost immediate.

You can load files from any DOS (including specialized operating systems such as SpartaDOS). And there's no problem loading First XLEnt files to other word processors that use an Atari-compatible DOS. First XLEnt is

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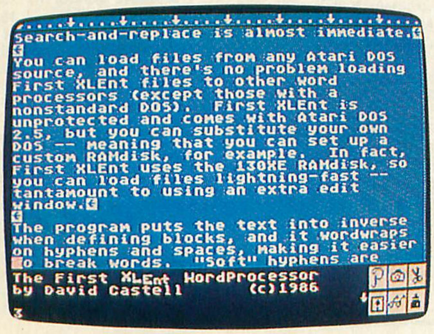
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WORD PROCESSORS
continued from page 25

not copy-protected and comes with Atari DOS 2.5, but you can substitute your own DOS—meaning that you can set up a large RAMdisk, for example. In fact, First XLEnt uses the 130XE RAMdisk, so you can load files lightning-fast—tantamount to using an extra edit window.

The program wordwraps on spaces



and hyphens, making word-breaks cleaner. "Soft" hyphens are ignored unless needed for a line break, and "hard" spaces prevent a line break at that space. However, if you use a double hyphen for dashes (—), they will be split up at the end of a line when printed.

First XLEnt has a visible, editable cut-and-paste buffer. You can insert a disk file anywhere in your text without losing the end of your document. You can save to disk any *part* of the document in memory. Also, when working with two documents in memory, First XLEnt flips between them instead of splitting the screen into small windows. (Those who prefer two windows might like PaperClip better.)

The biggest limitation we found in First XLEnt is that the cut-and-paste buffer holds you to one screen—800 characters. Also, the printing section in the manual could be more informative.

When you go to the icon menu you're not always returned to your original spot in the text, or even to the same typing mode. If you were in Insert mode, you might find that you've overwritten some of your document before you realize you're no longer in that mode. And finally, the [CONTROL] key combinations on the 800 become [OPTION] key on the XL/XE.

But despite any minor quibbles, the First XLEnt Word Processor is a most welcome entry in the 8-bit market. It's powerful, easy to use and highly original.

$29.95. XLEnt Software, P.O. Box 5228, Springfield, VA 22150. (703) 644-8881. (Reviewed in **Antic**, January 1987, page 53.)

PAPERCLIP

As we've said on various occasions, Batteries Included's **PaperClip** is the 8-bit word processor we use at **Antic**. Several features weight the dice heavily in PaperClip's favor. It has "macro" capability for writing out lengthy strings of stored text with just two keystrokes. It has a generally fast and efficient command structure. It lets you work on two windows at once, and can use the paste buffer as a third window. It reads standard Atari DOS files, so you can easily work with files from most other 8-bit word processors.

PaperClip's best and most original editing features include commands to transpose two adjacent characters or words in a line, and to delete one word. When you press [CONTROL] [SHIFT] [CAPS], the cursor scoots along, changing capital letters to lowercase or vice versa.

The search-and-replace feature is good, but it slows down as file size increases. However, you can search and replace as many as six strings during a single global substitute. You can easily merge files, rename or erase them, and format disks. PaperClip can automatically save your text after a number of keystrokes which you select.

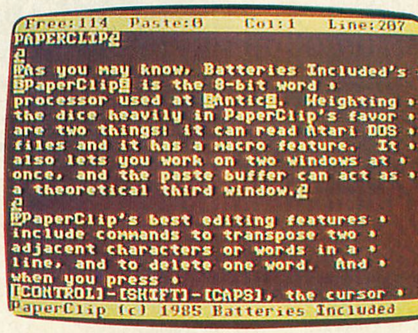
PaperClip's commands are generally easy to remember. [CONTROL] [SHIFT] [R] **R**eads a file from disk, and [CONTROL] [SHIFT] [W] **W**rites it to the disk. [CONTROL] [SHIFT] [M] **M**oves a block, [CONTROL] [B] turns on **B**oldface, etc. But then [CONTROL] [A] sets print tabs and [CONTROL] [T] forces a new page, so the memory associations are not always that clear.

Among the word processors in this report, only Superscript and PaperClip have math functions. PaperClip can add, subtract, multiply and divide, and print totals and subtotals. But you need to use the print preview window to see the results, which for unknown reasons often renders useless the block move command, [CONTROL] [SHIFT] [M].

Other functions include batch file processing and Mail Merge. The utility files also include machine language printer driver maker, a graphics dump and an AtariWriter to PaperClip conversion program. [CONTROL] [SHIFT] [1] gives a word count, but it's not terribly accurate. It counts spaces, not words, and consequently misses by as much as 20 percent. The print preview feature uses PaperClip's wide horizontal scrolling to display the page as it will look on paper.

Despite all these flashy and valuable features, **Antic** editors have learned from nearly two years of heavy PaperClip use that the software sometimes mysteriously locks up or drops characters. Also, the type-ahead buffer is often too slow to keep up with reasonably speedy typing, especially at line-breaks.

The program doesn't tell you when your data disk is full. And in a rare



copy-protection scheme, you can back up the disk but you must plug the enclosed "hardware key" into joystick port 2 to run PaperClip. That key costs $20 to replace, but a keyless 48K-only version is available for $39.95.

Our copy of SpellPack, the spellchecker in PaperClip's 130XE version, didn't show words like "without," "us" and "too." But it had no problem with "mnemonic" or "dubious"—and it also provided a large selection of non-words such as "usabg" and

"thesficking."

However, Batteries Included has assured **Antic** that these bugs are fixed in PaperClip version 2.0 which is presently shipping. Upgrades are free with a dated receipt within 90 days of purchase. After that, the fee is $10 for an updated 130XE version and $15 for an upgrade from XL to XE. $59.95. Batteries Included, 30 Mural Street, Richmond Hill, Ontario, L4B 1B5, Canada. (416) 881-9941. (Reviewed in **Antic**, May 1985, page 24.)

LETTER PERFECT

LJK's **Letter Perfect** has been around for Atari 8-bit computers since 1981. It uses its own operating system and cannot use files compatible with Atari DOS unless they are converted with LJK's Utility Disk. This translator can switch files back and forth between Letter Perfect and standard Atari DOS formats.

You also need another translator disk (such as FIX-XL from The Catalog) to run Letter Perfect on an Atari XL or XE.

We used Letter Perfect as our **Antic** word processor until PaperClip came along. One of the things we liked about it was that it could be used with the OmniView 80-column card. ($69. CDY Consulting, 421 Hanbee, Richardson, TX 75080. (214) 235-2146.)

Getting to most of Letter Perfect's file commands requires you to press the [ESC] key, which takes you from the editing screen to a main menu. It takes a while to learn Letter Perfect commands. But once you do, you should have little trouble. Almost refreshingly, you can type as fast as you want and each character will appear on the screen almost instantly.

Letter Perfect has an outstanding spell-checker. This, however, necessitates using yet another disk. But when you see how quickly the program counts words in a document and searches the dictionary disk, you won't mind.

Letter Perfect's non-standard operating system is its biggest drawback. If you normally work with Atari DOS files, it's inconvenient to use a word processor that doesn't. And what happens if you find a word processor you like better? You must convert all your active files with the LJK Utility Disk. $99.95. LJK Enterprises, 7852 Big Bend Blvd., St. Louis, MO 63119. (314) 962-1855. (Reviewed in **Antic**, March 1985, page 38.)

SUPERSCRIPT

With the British-designed **Superscript**, beginners can select commands from a menu structure, while experienced users can work faster with single-key [CONTROL] commands.



Superscript and PaperClip are the only 8-bit Atari word processors that offer macros and arithmetic functions. The macros let you type out an assigned string of characters by pressing one key. Superscript's math processing is outstanding. You can calculate in columns, rows or tables within the text. In fact, you can automate the arithmetic with macros to create a mini-spreadsheet—especially since text width can be scrolled up to 240 columns across.

Print formats are very flexible and easy to customize. You can even print every other page, if you want to feed your paper through twice and produce a document that is printed on both sides of the page. And you can print alternating wide margins to allow binding.

Superscript comes with an expandable dictionary which the distributors say contains 20,000-words. Actually, you get to choose between two dictionaries, offering either British or American spelling. You add your own personal words to the main dictionary simply by typing them in and pressing a single key.

The program loads text only by line units, so you can run out of file space after 780 carriage returns. Fortunately, the disk storage scheme is more efficient.

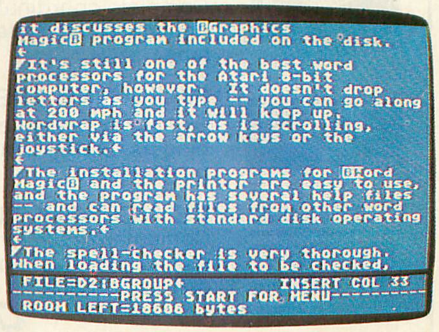
Superscript requires an Atari XL with at least 64K, or a 130XE. On the 130XE, the program lets you load two files into memory and flip back and forth between them. Just as in First XLEnt, you can move text between the dual files even though the windows are not onscreen at the same time.

Especially if you use a lot of arithmetic in your text files, Superscript should be seriously considered as your word processing choice. $59.95. Progressive Peripherals and Software, 464 Kalamath Street, Denver, CO 80204. (303) 825-4144. (Reviewed in **Antic**, March 1986, page 13.)

WORD MAGIC

Word Magic from The Catalog is one of the best all-around word processors for the Atari 8-bit computer. It doesn't drop letters as you type—you can go along at 200 mph and it will keep up. Wordwrap is fast, as is scrolling, either via the arrow keys or the joystick.

The installation programs for Word Magic and the printer are easy to use. The program has several help files, and it can read files from other word processors that use standard disk



operating systems. As with most products from The Catalog, the Word Magic documentation is on the back

continued on next page

of the program disk.

Like PaperClip, Word Magic occasionally locks up, we found. So it pays to save your file often. Also, Word Magic stores a line with only a single carriage return as 40 bytes. It treats the 39 screen spaces after the return as bytes in the file, even though they're useless. Word Magic loads the printer driver from disk each time it prints. This is a comparatively slow process.

One of the best features of this word processor is its spell-checker. Spell Magic ($19.95. The Catalog, APO144.) isn't literally *part* of Word Magic, but the programs definitely work hand-in-hand. And Word Magic can be copied to a disk containing Spell Magic, which makes things easier and faster.

The spell-checker is very thorough —although it takes some time to load the 34,000-word dictionary. When you load the file to be checked, the program counts the total words and unique words, prompts you to insert your personal add-on dictionary, if any, and then to insert the Spell Magic Dictionary. Spell Magic slowly scans the disk, which takes over 10 minutes. But then it very quickly checks through your document. Spell Magic also works with any other word processor that uses standard Atari DOS.

$19.95. The Catalog, AP130. $29.95 for 130XE version including Spell Magic, APO160.

HOMEPAK HOMETEXT

Batteries Included's **HomePak** is best known for HomeTerm, an excellent telecommunications program. It also includes **HomeText**, a good introductory word processor and HomeFind, a good introductory file manager. All three programs can easily share data files.

HomeText's maximum file size is only 6,620 bytes (1,000 to 1,500 words), which makes it suitable primarily for writing personal letters or short memos. It has very few editing commands, and its printing and storage commands can be accessed only by leaving the text window. Its stylized character set is somewhat distracting.

But HomeText has an outstanding block-move function that leaves most of the others in the dust. Block move, delete and copy occur almost instantly—but of course the small file size maximum is a factor here.

HomeText is easy to use. If the command letter doesn't start the command word, at least it's *in* the command word and is highlighted—as in EXIT to Menu.

For some reason, HomeText's command symbols are more than one character long. In HomeText, the paragraph symbol is "Indnt →5." Highlighting a single letter in a word, as in EXIT above, makes it hard to read.

$19.95. Batteries Included, 30 Mural Street, Richmond Hill, Ontario, L4B 1B5, Canada. (416) 881-9941. (Reviewed in **Antic**, March 1985, page 74.)

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SuperRAT, a new high-accuracy digital version of Zobian's mouse for Atari 8-bit computers, can access every pixel in Graphics 8. It comes with Accu-Draw for $69.95 and with RAOS for $99.95. **RAOS** ($49.95), the Rat-Actuated Operating System, gives you a "GEM" system on your 8-bit Atari. RAOS has its own icon-based desktop program, Z-DOS, replacing DUP.SYS, and a mouse-controllable, user-programmable windowing environment occupying 3K of RAM. RAOS uses a Player/Missile cursor to select icons and is compatible with most memory upgrades.

CIRCLE **255** ON READER SERVICE CARD

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BASIC ENHANCEMENTS II

First Byte
P.O. Box 32
Rice's Landing, PA 15357
(412) 627-3596
$24.95, 48K disk

First Byte's **Enhancements to BASIC, Version II** is a completely rewritten package, not just an upgrade. You can access many DOS functions in immediate mode. Enhanced BASIC II makes it easier to trace your program flow for debugging. The software renumbers, block deletes and provides automatic line numbering.

CIRCLE **257** ON READER SERVICE CARD

VIDEO TITLE SHOP, MERCENARY: 2ND CITY, FIVE FROM PSS

Datasoft
19808 Nordhoff Place
Chatsworth, CA 91311
(818) 886-5922
48K disk

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CIRCLE **259** ON READER SERVICE CARD

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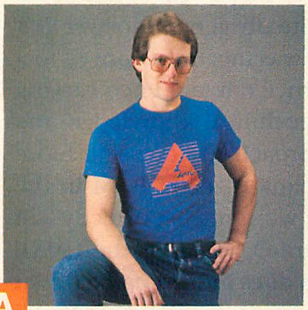
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130XE Double Feature

BY NAT FRIEDLAND, ANTIC EDITOR

Bill Wilkinson cares. **Antic** has been "blessed" on a number of occasions by long, irate letters from the founder of Optimized Systems Software (creators of BASIC XE, MAC/65, ACTION!, etc.), taking us to task for some offense or other against his vision of pure Atari knowledge.

Often enough, we agree with the Wilkinson critiques and sincerely try to mend our ways. Even when we don't agree with Bill's specific objections, we pay close attention to what he has to say. Not only is Bill Wilkinson among the leaders in independent Atari software development, he's also somebody who's concerned enough about Atari issues to regularly write **Antic** three-page, single-spaced letters arguing his viewpoints.

HOW IT STARTED

Our latest "letter-bomb" from Wilkinson concerned an October, 1986 I/O question about the extra memory in the Atari 130XE. Never one to mince words, Bill informed **Antic** that he considered our answer "incorrect, incomplete and misleading" and full of "half-truths."

Having gained our full attention, Bill then proceeded to demonstrate how he felt the 130XE RAM banks should be taught. This demo consisted of a detailed article which he said he hoped we would publish. No problem. We've been trying to get him to write more **Antic** articles for years. (Wilkinson wrote the original *TYPO* automatic listing proofreader program.)

Bill's article in this issue, *Understanding the 130XE RAM Banks* adds many useful and practical details to the information that **Antic** published in Ian Chadwick's *130XE Memory Management* (November, 1985). We're delighted to be able to bring Bill's words of wisdom to you—even under these somewhat unusual circumstances.

WAS ANTIC WRONG?

Brian Schade's question in the October, 1986 I/O Board was short and specific. He asked, "What is the significance of having 128K memory in the Atari 130XE, if only 16K can be accessed at one time, per program?" Under **Antic's** usual deadline and space pressures, this did not seem to call for a vast amount of technical detail.

So our technical staff opted for a short, admittedly general answer that essentially was meant to convey to a large audience (an audience varying widely in technical knowledge) the overall approach to accessing more than one bank of extra RAM in the 130XE. As we wrote—correctly—in the October I/O, accessing the 130XE RAM banks does indeed come down to "virtually instantaneous switching" between separated active blocks of memory.

By now—with the wonderfully clear understanding of hindsight—we can see that although our answer was not really incorrect, we unfortunately left room for some misinterpretations by keeping the information short and general. To do anything useful with 130XE RAM banks, an advanced programmer would need to know details about how only certain memory banks are available, only under certain conditions and only via certain programming techniques.

To adequately explain all this would require an article of at least a thou-

continued on page 36

BILL WILKINSON SPECIAL

RAM Banks on the 130XE

Access the full 128K memory

I have included a diagram *(Figure 1)* that will help you understand all that follows. Please study it before you continue. As the diagram shows, you should visualize the Atari 130XE as a 64K computer with several "extra" banks of memory tacked on.

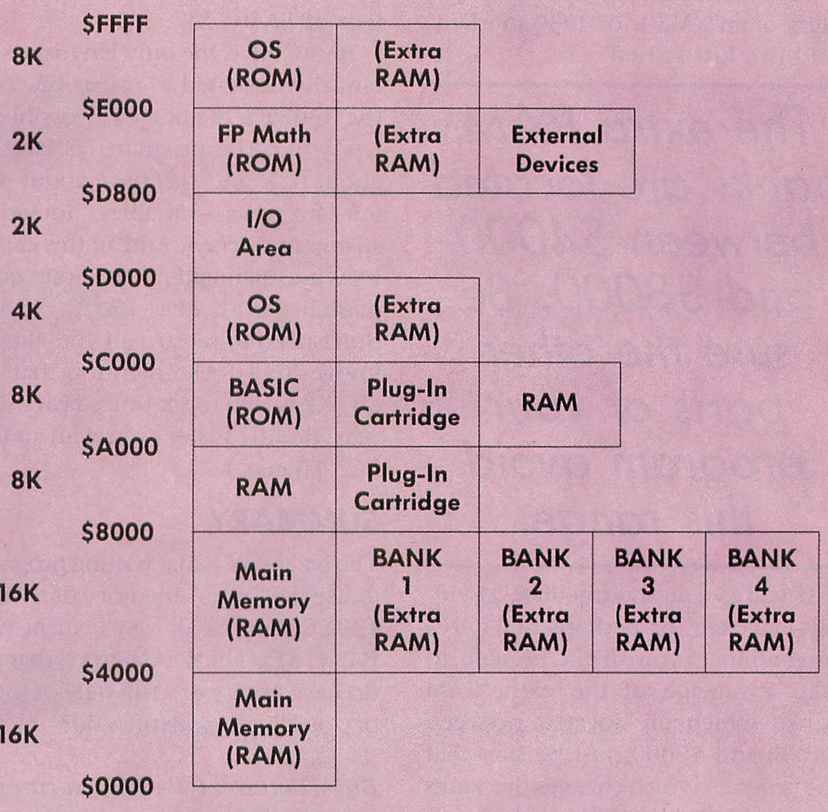
Why a 64K computer? Quite simply, because that is as much memory as a 6502 microprocessor can address. Technical reason for this: It uses 16 address lines, and 2^16 is 65536—which is 64K, the number of possible unique addresses.

What is the "default" configuration of this 64K computer? Just follow down the leftmost column of boxes in the diagram. There's 10K of OS (Operating System) ROM, 2K of I/O, etc. And yes, if you add it all up, it comes to 64K. If you simply turn on your computer and do nothing special, this default configuration is what you get. Notice that Atari BASIC is "on" and available in the default configuration!

There are three ways to alter this configuration. First, you can plug a cartridge into the port on the back. Depending on the design of the cartridge, either 8K (Atari Assembler/Editor) or 16K (cartridge version of AtariWriter) of your memory becomes dedicated to the cartridge. Notice that there is no way within the 130XE to override a cartridge! (OSS SuperCartridges have special circuitry which allows them to be turned off via software. But that circuitry is in the cartridge, not the 130XE.)

Second, in a similar fashion, hardware devices which plug into both the cartridge and the extended interface slots may "pre-empt" the area normally used by the floating point math routines in the OS ROMs. (This is how the SupraDrive hard disk and several devices from ICD are hooked into the memory map of a 130XE.)

FIGURE 1
130XE MEMORY MAP



Finally, the easiest way to control the selection of the "Extra RAM" (look for this designation in the diagram) is via PORTB, the hardware control port at location $D301. I am not going to discuss how the various bits in this control port work, since Atari's manual gives a brief description and since. . . Well, keep reading.

HOW EASY??

I said the "easiest way" to use more of your 130XE's memory than the default configuration provides is to use the $D301 control port. But even though it's easiest, it is not at all easy! This is *not* a contradiction: A 90% difficulty rating may be easier than 95%

continued on next page

BILL WILKINSON
continued from page 35

or 98%—but it is still pretty tough.

My recommendation: If you are not *at least* an intermediate-level assembly language programmer, *don't* mess with the extra RAM banks. It is very, very easy to lock up your programs irretrievably if you use the $D301 port at all.

You can mistakenly turn off the piece of memory your program currently occupies, thereby causing the CPU to get completely lost. You can turn off the OS ROMs just before an interrupt happens and send the computer to sleep. Or, more subtly, you can disable the carrier detection capability of an XM301 or 1030 modem. And I've just started.

The extra RAM banks are located between $4000 and $8000. Be sure the other parts of your program avoid this range.

If you *are* an intermediate assembly language (or perhaps ACTION!) programmer, you might be able to take advantage of the extra RAM banks which are located between $4000 and $8000. Just be sure that the program which changes the banks does *not* reside anywhere in this range or use data stored in one bank while another is active.

But I would still avoid the RAM from $C000 upwards. Aside from the difficulty of handling such things as interrupts, character sets, etc., more and more versions of DOS are beginning to use that area. This makes sense because it is difficult for the average programmer to access this memory. So why not let the (hopefully expert) DOS programmers use it to save space in the more readily programmable "lower" memory? DOS XL and SpartaDOS already serve you in this way, and I think I can confidently predict at least one more significant DOS in the offing. (*Is this the Atari 8-bit DOS for 3 1/2-inch disks, Bill?* —ANTIC ED)

BASIC SOLUTION

And what about you Atari BASIC programmers? How can you use the 130XE's extra memory banks? Two good ways: 1. Use a commercial RAM-disk program such as the one provided with Atari DOS 2.5 and be happy. 2. Use BASIC XE. This may seem a bit self-serving, since we at OSS produce BASIC XE. But the truth of the matter is that there is *no* equivalent of BASIC XE.

BASIC XE is the only language specifically designed to use as much of the 130XE's memory as possible. It lets you write programs as large as about 62K and *still* have about 32K left for data—variables, including strings and arrays. And all this capacity while maintaining 98%-plus compatibility with Atari BASIC. So you don't need to relearn all you already know. (Can I also mention that BASIC XE is two to six times faster than Atari BASIC? Faster even than an IBM PC? Thanks.)

SUMMARY

The bad news is that writing programs to use the "extra" memory of an Atari 130XE is not at all easy (except with BASIC XE). The good news is that you do have access to a full 64K of memory at all times. 'Nuff said?

Bill Wilkinson is the longest-running Atari programming columnist and the founder of Optimized Systems Software. In May, 1986 OSS won the Antic Award for Lifetime Achievement, honoring such major programming tools as MAC/65, ACTION!, Personal Pascal and BASIC XE.

BASIC XE
OSS, Inc.
1221-B Kentwood Avenue
San Jose, CA 95129
XL/XE, cartridge plus disk
$79 (408) 446-3099

130XE DOUBLE FEATURE
continued from page 34

sand words. Fortunately, Bill Wilkinson took the bait and saved us the work of writing just such an article. Yes, we confess. . . the whole thing was just a sneaky plot to get Bill to write something for **Antic** again! (Big grin.)

BILL'S CHALLENGE

Several of the conclusions Bill came to in his excellent article really made the **Antic** technical staff sit up and take notice. Wilkinson stated, "Writing programs to use the 'extra' memory of a 130XE is not at all easy (except with BASIC XE). . . . If you are not *at least* an intermediate level assembly language programmer, *don't* mess with the extra RAM banks."

Not that we exactly disagree with all that. BASIC XE—an OSS product—is clearly the most accessible tool for controlling the 130XE's extra memory. And for those who try to access the full memory of the 130XE without a very clear understanding of memory addresses, Bill's article lists a number of the interesting ways you can crash your program.

However, it did seem to the **Antic** technical staffers that practical 130XE memory bank switching should be available from standard Atari BASIC if sound programming methods are used. The result of our explorations is this issue's *130XE Slide Show* by Bill Marquardt (with additional help from Patrick Bass and Charles Jackson).

130XE Slide Show is a short, clean program that loads two different Micro-Painter pictures into each of the four extra memory banks and flips between the eight pictures so fast that the eye can barely follow. We have left it running all day long without any crashes.

But Bill Marquardt agrees with Wilkinson that he couldn't have written a bank switcher in BASIC without previously gaining extensive programming experience in assembly language. For more details about the offbeat techniques required, see the *130XE Slide Show* article.

Flash 8 pictures lightning-fast

130XE Slide Show

BY BILL MARQUARDT, ANTIC TECHNICAL ASSISTANT

Learn to use the extra 64K memory in your 130XE. These short programs demonstrate how you can use Atari BASIC to control RAM bank switching. 130XE Slide Show works on Atari 130XE computers (or compatible memory upgrades) with disk. This article's first listing, the simpler 130XE Bank Switcher routine, will work on cassette as well as disk.

"*How can I use the 130XE's extra memory in my own BASIC programs?*"

This is one of the questions asked most often of the **Antic** technical staff.

Elsewhere in this issue, Bill Wilkinson warns us of the difficulties in using Atari BASIC to control 130XE RAM bank switching. Ian Chadwick offered similar advice in the November 1985 **Antic** (*130XE Memory Management,* page 28). You should carefully read both articles before trying this technique in your own programs.

Although bank-switching programs are best written in assembly language, Atari BASIC is powerful enough to demonstrate the "bare bones" of the technique. These two demonstration programs are short, but surprisingly effective.

And even if you don't understand the processes involved, you can still enjoy using your 130XE Slide Show program. It is ideal for user group meetings, trade show displays, or even short animation sequences.

BANK SWITCHER

Type in Listing 1, SWITCH.BAS, checking it with TYPO II, and SAVE a copy (to disk or cassette) before you RUN it. This short stand-alone program fills the first "extra" 16K memory bank with letter A's, the second bank with B's, the third with C's and the fourth with D's. The program then "switches" rapidly between banks, displaying the contents of each bank on a Graphics 2 screen.

Each screen is located in a different 16K bank of the 130XE's extended memory. When you type RUN, you'll first see your 130XE slowly fill each bank with the appropriate letter. The letters will then begin flashing before your eyes as one bank is switched "in" and another is switched "out."

130XE SLIDE SHOW

Listing 2, SLIDES.BAS, is a considerably more useful program even though it's not that much longer than the first listing. Type in SLIDES.BAS, check it with TYPO II, and SAVE a copy (to disk only) before you RUN it.

SLIDES.BAS loads eight of your favorite microscreens into RAM and continuously flashes each picture onscreen in a digital slideshow—at adjustable speeds that you can make blinding-fast if you desire.

Use Micro-Painter or PD Micro-Paint Artist ($10, The Catalog, PD0053) to create your screens.

If your microscreens are in a different format, you can use the *Rapid Graphics Converter* (**Antic**, Novem-

ber 1985) to convert your pictures to Micro-Painter format. (Antic Disk owners: We have included *Rapid Graphics Converter* as a bonus program, CONVERT.BAS, on the monthly disk.)

After you have selected your microscreens, copy them to your SLIDES disk using filenames "D:F1", "D:F2" and so on up to "D:F8".

If you'd rather use other filenames, type them in at lines 180 to 210, or replace these lines with your own input routine.

When RUN, SLIDES.BAS loads all eight microscreens into the XE's "extra" RAM. You'll only see four of these pictures as they load, though, and their colors will not be correct. But once all eight screens are loaded, the colors are corrected and the slide show begins.

You can adjust the speed of the slide show with a paddle controller plugged into joystick port 1.

HOW IT WORKS

Each Micro-Painter picture contains 7680 bytes of picture information and four bytes of color information. This is just less than 8K of memory. We can put two of these pictures into each 16K bank of memory. By combining page flipping and bank switching techniques, we are actually using almost all of the 130XE's extra memory!

On the older Ataris (those with four joystick ports), ports 3 and 4 were controlled by PORTB (54017, $D301). The 130XE, having only two joystick ports, uses PORTB to determine how the memory will be used by the 6502 CPU and the ANTIC chip.

Primarily, we're interested in bits 2 through 5 of PORTB. Bits 0, 6 and 7 will be set (equal to 1), giving us a base value of 193 (1+64+128 = 193).

A zero in bit 5 tells ANTIC to use the extended memory. Otherwise, ANTIC will use main memory. Bit 4 is used the same way for the 6502. The variable MODE controls bits 4 and 5. Bits 2 and 3 determine which of the four 16K banks of the extended memory will be used.

Using this information, we can use the following formula to do all of our

continued on page 43

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—*Byte Magazine*

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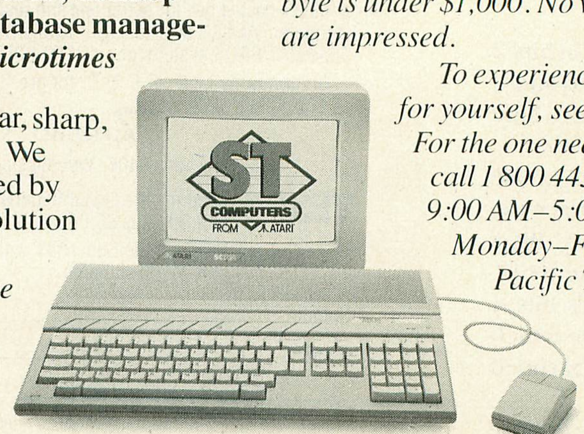
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—*Byte Magazine*

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—*Jerry Pournelle, Infoworld*

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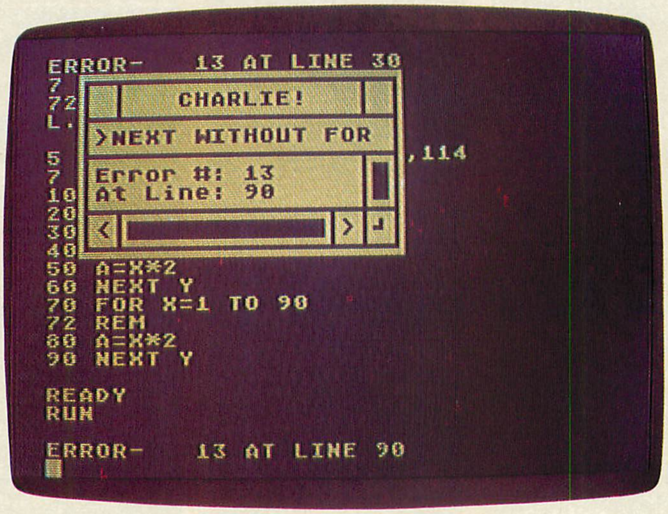
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BY PATRICK BASS, ANTIC ST PROGRAM EDITOR

Electric Charlie

Pop-up window explains error messages



Electric Charlie! is more than just a demonstration of how to program a memory-resident pop-up window for Atari 8-bit computers. It automatically displays useful explanations of any error number message you might encounter while writing your own programs. This BASIC program works on all 8-bit Atari computers of any memory size, with disk drive.

Atari 8-bit BASIC is a good, solid language that packs surprising power into 8K and has served programmers admirably for almost seven years now.

However, one of the things I miss when using Atari 8-bit BASIC is detailed error messages. To conserve memory space, whenever an error happens inside Atari BASIC, the language spits out that familiar "ERROR xx AT LINE xxx" message—and "ERROR xx" is merely the *number* of the error that occurred. You then must look up—probably in a reference book—the real meaning of the error number.

Here at **Antic** we have it easy. Technical Editor Charles Jackson knows the error codes by heart. Four or five times a day some plaintive voice comes wafting across the office, asking, "Charlie, what's a 144?" or, "Charlie, what's a 128?" Charlie rattles off the error and everybody's happy.

HEARTBREAK HOTEL

Recently, though, Charlie got sick and had to stay home for a few days. Panic set in right after the first "Charlie!" call went out. Work ground to a halt as we went looking for lists of error messages.

In desperation, we even phoned our favorite computer company. A secretary listened to our problem and asked us to hold. Then somebody came on the line and said that whenever anyone there got an error message, they called Charlie Jackson at **Antic**. But he didn't seem to be in that day.

ELECTRIC CHARLIE

Thus was born the need for Electric Charlie!, a utility for Atari 8-bit BASIC programmers which pops up a window on the screen showing the last known error number, the line where the error occurred—and a short description of the type of error that occurred.

When Electric Charlie! is installed, you just program along in Atari BASIC. When BASIC stops at an error, simultaneously press the three keys—[SHIFT] [CONTROL] [ESCAPE]. Electric Charlie! pops up on the screen to tell you which error actually happened. The next key you press will close the Electric Charlie! window.

Electric Charlie! lives on disk as an AUTORUN.SYS file. When you boot your Atari 8-bit computer with this disk, Electric Charlie! will automatically install itself in low memory, above DOS and below the start of BASIC's memory. It will then sit quietly and look at each keystroke. When Electric Charlie! sees that you have simultaneously pressed [SHIFT] [CONTROL] [ESCAPE], its window pops up and displays the last known error code. Any keystroke that follows will close Electric Charlie! and restore the full screen.

TYPING IT IN

Type in BASIC Listing 1, CHARLIE.BAS, check it with TYPO II and SAVE a copy to disk before you RUN it. You do *not* need to type in assembly language Listings 2 and 3 in order to RUN the program.

When you RUN Listing 1, it will create a disk file called CHARLIE.EXE. Antic Disk owners: You will find CHARLIE.EXE on this month's disk.

Transfer CHARLIE.EXE to another disk and rename it AUTORUN.SYS. Make sure the new disk has been formatted using DOS 2.0 or DOS 2.5 and contains the DOS.SYS file. Now just turn your computer off, then back on. Electric Charlie! will load and run automatically.

The program first presents a short message across the top of your video screen, reminding you that Electric Charlie! has been installed. At this point, just start programming in Atari BASIC. Electric Charlie! is ready to help you at a moment's notice.

ASSEMBLY TAKE-APART

Listing 2, CHARLIE.M65, and Listing 3, CHAA.M65, are Electric Charlie! written in 6502 assembly language as implemented in MAC/65 from Optimized Systems Software. The listings are teaching examples for assembly language programmers. Listing 2 is a master file, used as a base to assemble additional code fragments. In this case, we have only one such fragment, Listing 3.

The opening lines of Listing 2 contain definitions for 5 macros. These are sections of code which will be called later in the listing. With macros, entire blocks of code may be defined once, then used throughout the code by simply stating their names.

The program begins at line 1090, and starts by jumping to a later section of code which will install Electric Charlie! into BASIC.

Below that, the ACCESSORY subroutine checks each one of your keystrokes to see if it is [SHIFT] [CONTROL] [ESCAPE]. If it is, we open the window. If it isn't, the window is closed and the character is passed along to BASIC. If the window is open, any subsequent keystroke will close it.

The calculated addresses for the window and the text *inside* the window are found between lines 1840 and 1960. Below that, the SETUP subroutine installs Electric Charlie! into BASIC.

Lines 2330 through 2520 contain the character map for the window. Feel free to change the size of the window, as WIND.W (window_width) and WIND.H (window_height) are calculated automatically when you assemble the program.

OPEN WINDOW

Now we get to the subroutine which opens the window. But before opening the window, we determine what information it will cover up—and we save that information to another part of memory. It never gets any harder than that. The following routine, CLOSE.WINDOW, reverses this procedure by replacing the saved screen memory. This erases the window.

Next, starting at line 3200, the ADJUST subroutine accepts standard ASCII characters and converts them into Atari's internal POKE codes. We don't PRINT in Electric Charlie!—we POKE characters to the screen.

WORKING WINDOWS

The subroutine WORK.WINDOW calculates and places the information inside the window. First it prints out the error number, then the line the error occurred on, and finally the explanation of the error.

The last three sections of code in Electric Charlie! are where we keep tables of information needed by the program. First, we find the table called ERROR.TABLE, where we keep a list of every known error. Next comes ERROR.JUMP, containing the addresses of the corresponding error messages. Finally, we find the table of descriptive error messages themselves, again stored in the same order as the two previous tables.

Electric Charlie! sure does help. It's not perfect, because BASIC can generate errors faster than Charlie! can keep up. But all in all, it's very useful for those of us who don't know the Atari error messages by heart—and who don't have the real Charles Jackson working at a desk within shouting distance.

Listing on page 89

SLIDE SHOW
continued from page 39

bank switching:

POKE PORTB,(193 + 16 * MODE + 4 * BANK).

Here, MODE is set to 0, telling both ANTIC and the CPU to use extended memory. BANK0 through BANK3 contain the proper bank values. These variables are defined in lines 278-280. Our initial display list is set up in line 250 and 300-350.

In extended memory mode, memory at locations 16384 ($4000) to 31767 ($7FFF) are switched out and one of the four 16K extra banks is switched in to take its place. Now, when your program PEEKs and POKEs in this range, it will be dealing with the new bank instead of the original.

Next, the program loads a pair of microscreens into each of the four memory banks. Lines 290 and 360-460 switch in the appropriate bank, then call the subroutine at line 740 to load two pictures into that bank.

Bytes 4 and 5 of the display list form an address which points to the beginning of screen memory. Notice that byte 4, the low address byte, is POKEd with a 16 at line 300. This offset is needed because our 7680 byte screen must cross a 4K boundary in RAM. Without the offset, the lower portion of our picture would not display correctly. The file loader routine requires the same offset at line 770.

The variable HI is used as the high address byte of the screens. It is POKEd into the display list as appropriate. During loading, HI is also used to determine whether the picture is to be stored into the upper or lower 8K of the bank.

Lines 470—620 do the actual bank switching and page flipping, using the subroutine at line 630 to set the color registers and adjust the display list.

To learn more about the techniques discussed here, we suggest the following books:

Your Atari Computer by Lon Poole. $19.95, Osborne/McGraw-Hill.

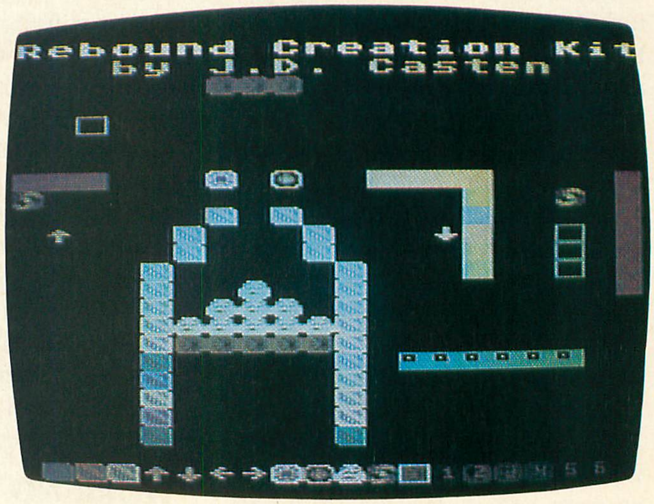
Atari Graphics and Arcade Game Design by Jeffrey Stanton with Dan Pinal. $12.95, The Catalog, MG0103.

Listing on page 93

BY J. D. CASTEN

Rebound Construction Kit

Prizes for best screens



Here is the Rebound Creation Kit we promised you last month—complete with Best Screens Contest, judged by J.D. Casten himself. The January issue featured Casten's sixth published **Antic** *game,* Rebound, *in which bouncing Flip Ogart rescued his fellow Ogart pudding-creatures from the lair of the evil RotogartEatos. Now this issue's sequel lets you create your own* Rebound *screens to challenge poor Flip even more.*—ANTIC ED

With this follow-up to January's Game of the Month, you can create your own Rebound *screens for Flip Ogart to dodge the deadly RotogartEatos. The article also includes a Best Screens Contest. Like J.D. Casten's original game, this BASIC program works on 8-bit Atari computers with at least 32K memory, disk or cassette.*

REBOUND CONTEST

With Rebound Creation Kit, you can construct your own fiendish screens for my *Rebound* game (**Antic**, January 1987). The magazine is sponsoring a contest for the best screens made with this program—which I will be judging.

Mail your screen entries on disk (DOS 2 compatible, please) to: Rebound Contest, **Antic** Magazine, 524 Second Street, San Francisco, CA 94107. All entries must arrive at **Antic** no later than *March 15, 1987*.

Winning screens will appear as an Antic Disk Bonus with the August, 1987 issue. Each winner will receive the August monthly disk issue plus the Casten Game Disk from The Catalog. All screen entries become the property of Antic Publishing. Disks cannot be returned.

GETTING STARTED

Type in Listing 1, REBOKIT.BAS, check it with TYPO II and SAVE a copy before you RUN it. The blinking cursor in the upper left-hand corner is your "drawing" cursor. At the bottom of the screen is a display of various shapes from *Rebound*, plus a blinking "selection" cursor.

To create screens, use the joystick to draw, using the shape selected with the selection cursor. The program supports all eight joystick directions with off-screen wraparound. Pressing the joystick trigger with the drawing cursor over an empty space puts the selected shape on the screen. Pressing the trigger over an occupied space blanks it.

[OPTION] and [SELECT] move the selection cursor.

The [START] key toggles between the two sets of shapes available for selection.

Use the keyboard to add text messages to the screen. Use inverse and lowercase letters for more colors.

Type [CONTROL] [S] to save a screen to disk. You will be prompted to type in a file name and a screen number. Note: Before using the SAVE option, move the drawing cursor to the position on the screen where you want Flip

to start out.

Type [CONTROL] [L] to load a previously saved screen.

Type [SHIFT] [1]-to-[5] to adjust the colors of a screen. Each screen can use different colors. Push the joystick up and down to adjust the luminance, left and right to adjust the hue, and press the trigger when done.

Type [CONTROL] [Q] to exit the Rebound Creation Kit.

Press [SHIFT] [CLEAR] to clear the screen.

The Rebound Creation Kit uses all the objects described in the Rebound game instructions plus these new ones:

New walls—To change the look of the game, you can use different wall shapes, solid blocks, or outline blocks.

Fake walls—These look like solid walls in the game (in the Rebound Creation Kit they have an identification mark), but Flip can bounce through them. Some will kill Flip, some will hide him and some will let him bounce over them. You can intermix these with solid blocks to create mazes.

Special—Certain shapes may be used by pressing special keys on the keyboard. Note that invisible barriers are shown in the Rebound Creation Kit as special shapes.

After you complete a screen, exit the program via [CONTROL] [Q] and LOAD the *Rebound* game program. Then ENTER the screen file created (using the name you typed in). RUN the program to make sure your screen is in place. (You can adjust the FIRSTSCREEN variable in line 4 to your screen number.) Then, SAVE your new *Rebound* game under a new file name.

SCREEN DESIGN HINTS

Warning: there are two rules to follow when designing a *Rebound* screen:

1. There must be at least one Ogart to save on a screen, and there must be a way for Flip to save each Ogart on a screen.

2. You can't put just one transporter on a screen. And if more than two are used, they may not work properly—Flip could end up in the middle of a wall.

Make sure your screens are possible to complete, but not too easy. Try to use the objects in fresh new combinations that challenge the player to use Flip in new ways. Try something bizarre.

You might use the text to help give a theme to a screen, or to possibly give a clue, a warning, or a pat on the back. Make efficient use of the screen, not wasting much space. Try to make sure that there are no dead ends (like a one way flow of RotogartEatos that can't be switched).

Since 1983, J.D. Casten has published six games in **Antic**, *including* Box-In *(December 1985),* Risky Rescue *(April 1984),* Escape from Epsilon *(June 1984),* Biffdrop *(December 1985) and* Adventure X-15 *(November 1984). The Catalog carries these on the Casten Game Disk ($12.95, ADS0001). Casten is currently a computer science freshman at the University of Oregon.*

Listing on page 95

MILLIONAIRE

Blue Chip Software
6740 Eton Avenue
Canoga Park, CA 91303
(800) 258-3244—National
(818) 346-0730—California
Requires BASIC
$19.95, 48K disk
CIRCLE 251 ON READER SERVICE CARD

Reviewed by John McCormick

I bought 300 shares of IBM and 10 call options on Exxon. My charts showed that General Motors looked good in view of the earnings projections in news reports, so I bought 200 shares of GM for my portfolio.

Two weeks later I had lost $50,000 and needed to sell all my shares of Dow Chemical just to pay the bills.

Some say money is the root of all evil—others claim it's the *lack* of money. I don't necessarily support either opinion, but I do know that the winning, losing, earning and spending of money fascinates me—much more than shooting down aliens or getting lost in mazes.

Millionaire is as much a stock market simulation as it is a game, combining real-life situations with exciting action. Millionaire and other Blue Chip Software games are so realistic that stock brokerage firms use them to train new brokers. Millionaire can either create a new game for you or restart one that you saved in progress. It also keeps track of the top scores for seven players

I have been an active investor for years, so my interest in the game is understandable, but my wife, who has no interest in finance, still found Millionaire a most fascinating game.

You start with $10,000. Your goal is to increase this amount to $1 million through shrewd investments in 15 stocks covering computers, oil and gas, retail, auto and heavy industries (steel, chemical, machinery). You also have 14 weeks of market information for all 15 stocks, along with graphs for each industry group, and you have 77 weeks to meet your $1,000,000 goal.

As a Novice investor you can only buy stocks for cash (much like the real world), but as your profits grow and your net worth increases, you move up through the ranks of Investor, Speculator, Professional and Broker.

As your rank increases, so does your range of investment tools. Soon you can use margin purchases, or put and call options. Eventually you can even borrow up to 80 percent of the value of your assets and leverage your investments. This increases the rate at which you gain (or, more likely, lose) money.

Each week you automatically see graphs of all your investments, price and price movement information on all stocks, and news reports. You can also view graphs of every stock, or follow the activities of entire industry groups.

Purchases are easily made, with the software handling all needed calculations, telling you how many shares you can buy with available cash, and even deducting commissions and interest.

This might sound complicated to those unfamiliar with the stock market, or it might sound too simple to an investor. Believe me, neither is the case. I had great trouble tearing myself away from Millionaire once I started, and I rarely quit playing before finishing a full 77 turns. My wife said she learned more about how I invest money from playing one whole session of Millionaire than from reading the Wall Street Journal on and off for 15 years.

My only complaint is that Millionare is slow at times—though my wife found that the program was always ready for her next move long before she'd made her decisions. Millionaire is completely menu-driven, often returning you to the main menu after completing an action when you might prefer finishing another transaction before leaving a particular area. This is really minor, though, because you can always leave the main menu again at any time.

The only tip I can offer in playing this simulation is not to pay too much attention to the news reports. Not that they aren't honest—it's just that, as in the real world, you can't always tell what will happen to a stock from the news about the company.

The only real improvement I can think of is if Blue Chip would send me a check when I win big at Millionaire. But then they'd probably want me to pay them when I lose. Oh, well, I guess using play money is probably the safest. So far all I have really lost is a fair amount of sleep.

DOTS-PERFECT UPGRADE KIT

Dresselhaus Computer Products
837 East Alosta Avenue
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$79.95
CIRCLE 257 ON READER SERVICE CARD

Reviewed by Len Dorfman

The **Dots-Perfect Upgrade Kit** is designed for Epson's FX, JX, RX, and MX printer series. For this review, I'll divide the Dots-Perfect functions into two catagories. The first category lets you select standard Epson printer functions such as condensed print, elite and double-wide from the printer's original control panel. This is useful, but it can be simulated easily with a word processor or printer utility program that transmits the appropriate control codes to the printer.

However, one feature is *so* important that it deserves its own category—the Near Letter Quality (NLQ) mode. NLQ can be initiated either by software commands or by using the printer's control panel—while the Epson continues responding to its normal commands.

Although I'm familiar with software design, programming techniques and software usage, I could never disassemble computer hardware without undue anxiety. But

continued on next page

since I received my Dots-Perfect Upgrade Kit on a lazy afternoon after my local Atari repair center had closed, I bravely decided to install it myself.

With some trepidation I opened the upgrade kit. The kit for my Epson JX-80 printer included a *very* clear installation instruction manual, three IC chips and a sticker showing the commands for the Dots-Perfect Upgrade. I removed the JX-80's cover and located the auxiliary board, using one of the manual's many photos as a guide. The chips to be changed were located below the auxiliary board and easily identified.

The manual said that rare versions of Epson printers have a jumper wire I would need to cut. I was so delighted by the ease of installation that I was actually disappointed that my JX-80 didn't have a jumper wire. A shorting block form needed to be moved, a few DIP switches flipped, and the printer was re-assembled in a few moments. I held my breath, plugged in the JX-80 and initiated the printer's self test. It worked the first time.

I returned the JX-80 to its proper place beside my Atari and printed a text file from the desktop using the condensed printing mode. Normally, I would have run a short utility program to initiate the condensed mode, but I decided to try the command sequence of the Dots-Perfect upgrade. I turned the printer on. As per instructions, I pressed and released the JX-80's On Line and FF buttons at the same time, then tapped FF, LF and On Line once each. My file was then printed in the condensed mode.

Truthfully, I didn't get the Dots-Perfect upgrade for the convenience of controlling my printer's function settings from the control panel. I got it for its NLQ printing mode, which I could barely wait to test. Following the easy instructions, I turned on the NLQ mode and printed the same text file. It was truly amazing. The print looked like the NLQ print quality on a more expensive Toshiba printer.

I really appreciated the thorough manual with its photos of Epson internals, logically-presented instructions and many examples. Installation was easy as there was *no* soldering required. As far as I can see, the chips work as advertised and the Dots-Perfect Upgrade is fun to use. On the down side, it appears to print as

```
Double Strike Emphasized
Draft Quality
NLQ Double Strike Emphasized
Near Letter Quality Mode
```

slowly in regular mode as the normal Epson does in its slow modes. Printing long documents would be very time consuming.

If you've ever bemoaned the fact that your Epson didn't have one of those fancy NLQ printing modes, you needn't fantasize about buying another printer. If you judge $80 and 45 minutes as fair payment for upgrading your Epson printer to have an NLQ function, then Dots-Perfect will do the trick. I'm glad I've got my upgrade. It's recommended.

SUPER REEVEKEY

Reeve Software
29W150 Old Farm Lane
Warrenville, IL 60555
(312) 393-2317
$19.95, XL/XE
CIRCLE 259 ON READER SERVICE CARD

Reviewed by David Plotkin

Super ReeveKey software allows you to use the old Atari CX85 10-key (actually 17-key) number pad with DOS, BASIC, SynCalc, HomePak and a few other programs.

To use the ReeveKey, boot up your Atari with the the ReeveKey disk in the drive. It takes a while to load, because the copy protection scheme causes your disk drive to retrack no fewer than *six* times. After the program finally loads, you can choose which joystick port to plug the keypad into and which "filter" to use.

The filter attempts to protect ReeveKey's customized operating system from being corrupted by the main program being run. It can have three values. From BASIC or DOS, value 0 seems to work. Some programs need a value of one, but the brief documentation doesn't say which ones. A value of two is only for SynCalc—don't use it with anything else. But the ReeveKey does work well with SynCalc, and this by itself may make it worth having.

ReeveKey also accepts custom keypad layouts from disk. This is a nice feature, since each key of the pad can represent as many as 10 characters. For example, one of your templates could be 17 of your most frequently used BASIC keywords, such as GOTO and PRINT, which are then put on the screen whenever you press the appropriate key.

After making your selections, put your main software into drive 1 and press [START]. This reboots the machine. The instructions say to hold down [OPTION] to get BASIC when rebooting, which is the opposite of normal. But the screen prompt says that holding down the [OPTION] key disables BASIC. Believe the instructions, the screen is wrong.

On the other hand, the instructions also say that pressing [START] and [SELECT] at the same time will reboot the machine, leaving the keypad driver intact so you can change programs. This rarely worked, especially from BASIC and DOS. Instead I got the cassette load tone.

The ReeveKey only works with Atari XL/XE models. Owners of the 400 and 800 are out of luck. A patch is available to allow SynFile+ to work, but you must send your original SynFile+ disk to Reeve Software along with a $2 handling charge. Save your work frequently, since unexpected crashes do occur. And stay away from the [RESET] button. Pressing it will reboot, and you'll lose the keypad driver.

The customizer screen lets you en-

continued on page 50

ter up to 10 characters next to each keypad symbol. If you type a character wrong, there is no way to erase it. Since every keystroke prints a character to the screen, you can only correct an error by adding an appropriate number of [BACKSPACE] characters, followed by the corrected character.

If you work primarily with BASIC or DOS and are happy with Atari's default key definitions, then Atari's own keypad driver works just fine. On the other hand, if you want to redefine the keypad keys, or use the keypad with SynCalc, SynFile+, HomePak or others, then the ReeveKey is just the ticket. Also, recent CX85 owners may have bought their keypads at closeout sales without *any* software included. Just be warned that you will need to do some experimenting with it before you can trust it for important work.

TOP GUNNER

MicroProse Software
120 Lakefront Drive
Hunt Valley, MD 21030
(301) 667-1151
$24.95, 48K disk
CIRCLE 257 ON READER SERVICE CARD

Reviewed by Gregg Pearlman

Top Gunner Collection is an anthology of three best-selling MicroProse aerial combat prorams—Hellcat Ace, MIG Alley Ace and Air Rescue. It's nice software with impressive graphics and sound effects. All three games are controlled with the joystick. In fact, the keyboard is virtually left untouched except when you occasionally press [P] to pause a game.

Hellcat Ace, set during World War II, gives you a first-person perspective of 14 scenarios that recreate air battles from 1940 to 1944. The object in most of the scenarios is, of course, to shoot down an enemy bomber. But in the Midway and Leyte Gulf segments, your main purpose is just to avoid being shot down.Some sophisticated flying maneuvers in 3-D airspace must be learned. The instructions discuss the loop, which is easy, and the split-S and Immelmann turn, both of which require flying upside down.

Similar moves and perspectives also apply to MIG Alley Ace, set during the Korean War. This has only five scenarios, but a plane can be flown by a two-player crew. The screen is split into cockpit views for each opposing plane.

Air Rescue is substantially different from the first two games. Here you're a chopper pilot trying to rescue a team of trapped archeologists in Northern Africa. The view is third-person 2-D this time, as you navigate your helicopter through a treacherous underground labyrinth, taking out nuclear furnaces and drone helicopters along the way. Three helicopters pursue you at all times—if you knock out one, another takes its place. Your chopper must not collide with *anything*, or else it will explode instantly.

All three games are interesting to watch and play. At $24.95, Top Gunner is a must for the collection of any combat flight simulation fan.

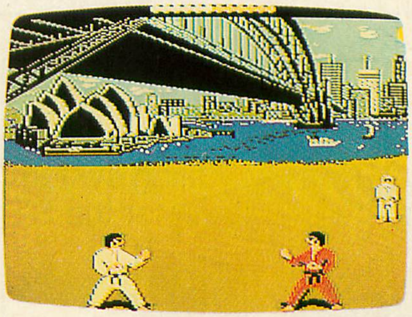
WORLD KARATE CHAMPIONSHIP

Epyx Inc.
600 Galveston Drive
Redwood City, CA 94063
(415) 366-0606
$34.95, 48K disk
CIRCLE 261 ON READER SERVICE CARD

Reviewed by Harvey Bernstein

At the June Consumer Electronics Show in Chicago, several companies announced renewed support for the Atari 8-bit computers. Epyx has made good on its promise by releasing **World Karate Championship**, one of the best sports simulations I've seen.

World Karate Championship is based on the popular arcade-type kung-fu and karate games. Like those, the game gives you a series of opponents of greater and greater ability in matches set all over the world. Using the joystick, you have a selection of 16 moves— depending on whether or not the trigger is depressed. You can throw everything from high and low kicks and punches to flips, lunge



punches and the ever-popular backspin kick. And you'll never get tired.

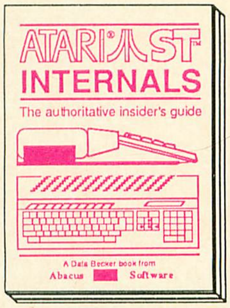
Normally it would be hard to remember the correct stick-button combinations to execute desired moves, but World Karate Championship is more than a hand and thumb exercise. The game actually encourages a Zen-like approach, as you carefully consider the appropriate move. But this doesn't mean your opponent will allow you too much time to consider your actions. You have to strike a perfect balance between offense and defense to be successful at this game.

The graphics and animation are similar to Broderbund's Karateka, with the motions of both player and opponent quite lifelike. Anybody who has seen "The Karate Kid" will understand the system used to score the game. Every time you or your opponent lands a blow during a 30-second round, the judge will award either a full point or half point. The first to score two points wins the match, and the game ends when the computer wins. In addition, after three matches you are faced with a challenge of "mental or physical discipline." This usually involves breaking bricks or dodging flying knives.

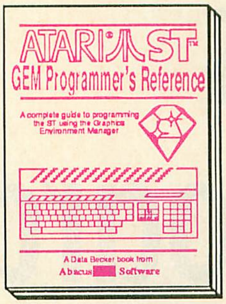
World Karate Championship is an excellent arcade game. If you think it's for you, head on down to the local software store and buy a copy. It's the least you can do.

A Wealth of Information

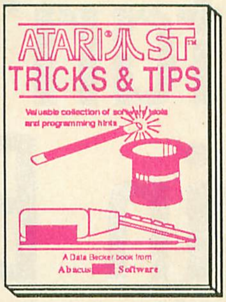
from the name you can count on



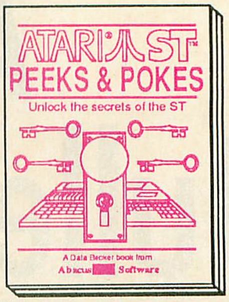
Essential inside info on the ST. Descriptions of sound & graphics chips, internal hardware, I/O ports. Commented BIOS listing. Indispensible reference for your ST library. 450pp $19.95



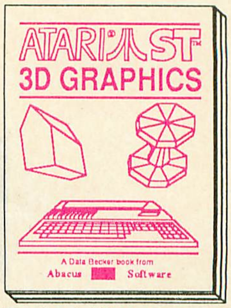
Easy-to-understand format covers the workings of GEM. Examples are in C and assembly. Covers VDI and AES functions and parameters. Serious programers should'nt be without. 410pp $19.95



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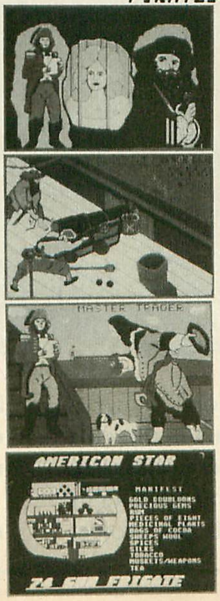
CIRCLE 042 ON READER SERVICE CARD

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PIRATES OF THE BARBARY COAST

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PROGRAM PARAMETERS	
LANGUAGE	MACHINE
NUMBER OF PLAYERS	1
AVERAGE COMPLETION	90 MIN
AGE GROUP	10 TO ADULT
CLASS	STRATEGY ACTION
SOUND	YES
ANIMATED GRAPHICS	YES
EQUIPMENT	MOUSE/JOYSTICK

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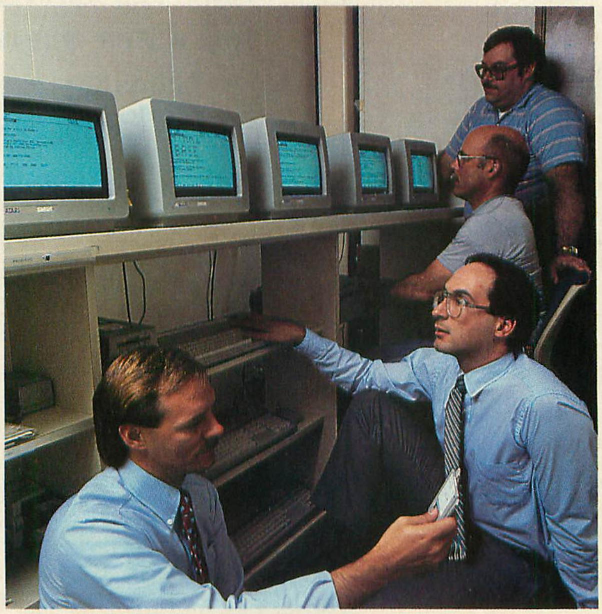
Atari's Bulletin Board

5 STs with hard disks, 12,000 monthly calls

BY GIGI BISSON

"I have a closet larger than this," Neil Harris says as four people squeeze into the Atari BBS.

Here, in a room so narrow you can stretch your arms and touch both walls, is what might be the largest bulletin board system (BBS) in the country, perhaps the world. Running on five Atari 520ST computers, five Racal Vadic 300/1200 baud modems, five Atari SM204 hard disk drives and Michtron BBS software, the 24-hour Atari Base BBS gets some 12,000 calls a month, nearly 350 every day.



Mary Rhomberg Lavery

The "closet" is actually a small office in the bustling Customer Service Department of Atari's headquarters in Sunnyvale, California, right in the middle of Silicon Valley. The tight space does have its drawbacks. "I'm developing a crease in my forehead from typing down here," jokes sysop (system operator) Greg Kranich as he bends down to a keyboard on a shelf one foot off the floor.

Although Neil Harris' official title at Atari is director of Marketing Communications, a job that encompasses everything from overseeing Atari's advertising campaigns to a hectic Customer Service operation, his pet project is the Atari Bulletin Board.

Harris gets help from three volunteer sysops. Greg Kranich (an 8-bit fan) and Dave Flory (past president of the BAAUG users group and an ST enthusiast) are both San Jose police officers. Fred Beckman (another ST fan) is a postal worker.

Many businesses now operate bulletin boards to deliver information to customers. For example, Michtron Software has a BBS that gets 50 calls a day. But as far as we know, Atari is the only *microcomputer* company that runs its own bulletin board.

Most questions are answered by other users in an ongoing dialogue. However, many callers find their questions already answered in the online notes before they even have to ask.

"A year ago when the rumor mill was very active, people started turning to Atari for the real facts," Harris says. The bulletin board grew out of the need to get out quick, accurate news about the new line of ST computers and the new Atari Corp.

Now the Atari BBS has become one of the company's most important customer service tools. Questions about

products, software and hardware problems can be addressed 24 hours daily, every day of the year. News reports and Atari press releases from the BBS are also uploaded to SIG*Atari on CompuServe. Unlike Atari's free bulletin board, CompuServe charges an hourly fee. But on the other hand, CompuServe can usually be accessed from local numbers without any long-distance charges.

HOW IT GREW

The BBS started in August, 1985 on two Atari 800 computers and a Corvus hard disk, running programmable BBS software called NightLight. An ST version of this program should soon be available for about $50 from Paul Swanson, Box R, Billerica, MA 01821.

When the Michtron BBS program for the ST became available, Atari added two 520STs to the system. But within one month, callers discovered which phone numbers went to the STs and which were linked to the slower computers—and they stopped calling the 8-bits. Now the 800s have been replaced by STs and an extra 520ST is devoted to answering questions from Atari dealers.

"We can deal with four times as many questions on a BBS as we can with live customer service reps at the other end of a phone line," Harris says. But the most popular service is public domain software—350 ST programs, 250 8-bit programs and 200 picture files.

A hot program can reach people incredibly fast. Harris picked up a West German game called Puzzle/Puzzle on a world-wide VAX mainframe network called UseNet. He posted the public domain game on the Atari BBS and within two days, Atari fanatics were playing it all over the U.S.

"If something's hot, people are downloading it within five minutes," sysop Beckerman says. But piracy isn't tolerated on the Atari BBS. Offenders who attempt to upload copyrighted software will find that they have about one minute of connect time a day.

The service has become so busy that Atari even considered purchasing a VAX. Using five ST computers doesn't only save money, however. "This way we are forced to push the ST harder," Harris says.

Currently, the five 520STs are running five separate but identical bulletin boards, each with its own telephone line. "Ideally, we would like to figure how to make them talk to each other and exchange messages," Harris says about a project that he's been working on with some bright Atari engineers. Harris would like to see the ST become to telecommunications what the Macintosh is to desktop publishing.

Flory volunteers at Atari one day a week, not counting the 16 to 20 hours a week he puts in from home. "My sweetheart wishes I spent the time with her," he says. Why on earth would Flory and Kranich, two cops who investigate accidents for the San Jose Police Department, spend so much time at Atari? "This is a total escape for us. When we leave the station we can come here and change our identity," says Kranich.

As long as Atari users continue to call, the dedicated group of sysops will continue to put in long hours answering questions and brainstorming on ways to expand the service to handle the calls that usually continue nonstop around the clock.

"Atari users are very community oriented and helpful, that alone is very gratifying for us," Harris says.

Atari Base BBS
1196 Borregas Avenue
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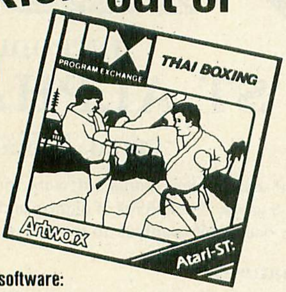
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CIRCLE 013 ON READER SERVICE CARD

ATTN: PASCAL USERS

MODULA-2

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Pascal and Modula-2 source code are nearly identical. Modula-2 should be thought of as an enhanced superset of Pascal. Professor Niklaus Wirth (the creator of Pascal) designed Modula-2 to replace Pascal.

Added features of Modula-2 not found in Pascal

- CASE has an ELSE and may contain subranges
- Programs may be broken up into Modules for separate compilation
- Machine level interface
  - Bit-wise operators
  - Direct port and Memory access
  - Absolute addressing
  - Interrupt structure
- Dynamic strings that may be any size
- Multi-tasking is supported
- Procedure variables
- Module version control
- Programmer definable scope of objects
- Open array parameters (VAR r: ARRAY OF REALS;)
- Elegant type transfer functions

Ramdisk Benchmarks (secs)	Compile	Link	Execute	Optomized Size
Sieve of Eratosthenes:	6.2	4.3	3.5	2600 bytes
Float	6.4	4.8	8.3	4844 bytes
Calc	5.5	4.2	3.3	2878 bytes
Null program	5.1	3.2	—	2370 bytes

```
MODULE  Sieve;
CONST   Size = 8190;
TYPE    FlagRange = [0..Size];
        FlagSet = SET OF FlagRange;
VAR     Flags: FlagSet;
        i:     FlagRange;
        Prime, k, Count, Iter: CARDINAL;
BEGIN   (*$S-,$R-,$A+ *)
  FOR Iter:= 1 TO 10 DO
    Count:= 0;
    Flags:= FlagSet(); (* empty set *)
    FOR i:= 0 TO Size DO
      IF (i IN Flags) THEN
        Prime:= (i * 2) + 3; k:= i + Prime:
        WHILE k <= Size DO
          INCL (Flags, k);
          k:= k + Prime;
        END;
        Count:= Count + 1:
      END;
    END;
  END;
END Sieve.
```

```
MODULE Float;
FROM MathLib0 IMPORT sin, ln, exp,
                     sqrt, arctan;
VAR x,y: REAL; i: CARDINAL;
BEGIN (*$T-,$A-,$S-*)
  x:= 1.0;
  FOR i:= 1 TO 1000 DO
    y:= sin (x); y:= ln (x); y:= exp (x);
    y:= sqrt (x); y:= arctan (x);
    x:= x + 0.01;
  END;
END float.
```

```
MODULE calc;
VAR a,b,c; REAL; n, i: CARDINAL;
BEGIN (*$T-,$A-,$S-*)
  n:= 5000;
  a:= 2.71828; b:= 3.14159; c:= 1.0;
  FOR i:= I TO n DO
    c:= c*a; c:= c*b; c:= c/a; c:= c/b;
  END;
END calc.
```

Product History

The TDI Modula-2 compiler has been running on the Pinnacle supermicro (Aug. '84), Amiga (Jan. '86) and will soon appear on the Macintosh and UNIX in the 4th Qtr. '86.

Regular Version $79.95 Developer's Version $149.95 Commercial Version $299.95

The regular version contains all the features listed above. The developer's version supplies an extra diskette containing a symbol file decoder – link and load file disassemblers – a source file cross referencer – symbolic debugger – high level Windows library Module – Ramdisk and Print Spooler source files – Resource Compiler. The commercial version contains all of the Atari module source files.

Other Modula-2 Products

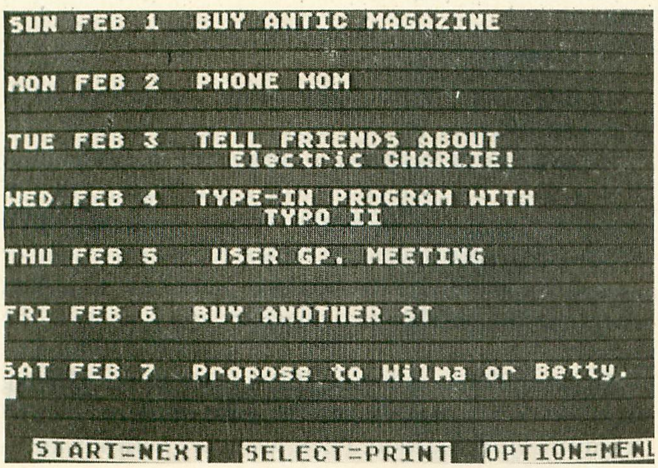
Kermit	– Contains full source plus $15 connect time to Compuserve.	$29.95
Examples	– Many Modula-2 example programs to show advanced programming techniques	$24.95
GRID	– Sophisticated multi-key file access method with over 30 procedures to access variable length records.	$49.95

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CIRCLE 061 ON READER SERVICE CARD

BY DAVID PLOTKIN, ANTIC CONTRIBUTING EDITOR



New Owners Column

Lesson 11: ATASCII, PEEK AND POKE

In Lesson 11 we'll cover several topics which just about finish the nitty-gritty components of BASIC programming. These include further information on the relationship between characters and numbers within your Atari, plus how to access the computer's memory directly. Next month we'll start on the fun stuff—color, sound, graphics and animation.

This series teaches beginners how to program in BASIC on all Atari 8-bit computers, such as the 800XL and the 130XE. The column began in March 1986 and, despite a lesson numbering inconsistency in Nov.-Dec. 1986, all lessons have appeared in proper order.

ASC AND CHR$

In Lesson 8 (November 1986), we discussed OPENing the keyboard and GETting a character:

```
10 OPEN #1,4,0,"K:":GET #1,A
```

This statement will wait until you press a key, then place the value of the key pressed into variable A. In this statement, A may only hold a numeric value. If you type PRINT A, you'll see that A does indeed contain a number, even if you pressed a letter on your keyboard. In fact, your computer treats all characters, including letters, numbers and the special [CONTROL] symbols as numbers.

The number the computer associates with each character is known as the **ATASCII** code (ATari American Standard Code for Information Interchange). You can find a table of these codes in Appendix D of *Your Atari Computer* by Lon Poole, Osborne/McGraw-Hill ($19.95). It's also in most other manuals.

For example, the ATASCII code for B is 66. Atari BASIC contains two commands for converting characters to their ATASCII code and back again. The first command is **CHR$**, which converts from the ATASCII code to the equivalent CHaRacter. This statement will print a capital B on the screen:

```
20 DIM A$(1):A$=CHR$(66):PRINT A$
```

CHR$ is important for several reasons. First, some numbers represent characters which can't be easily printed on the screen. For example, if you PRINT CHR$(125), the screen will be cleared. Besides clearing the screen, you can also move the cursor around on the screen under program control by PRINTing the CHR$ code correspond-

continued on next page

ing to the cursor arrows, or even insert or delete lines and characters on the screen by PRINTing the CHR$ code corresponding to [SHIFT] [INSERT] (for insert line) or other key sequences which perform these functions.

Furthermore, you probably also know how various printer options (such as double-strike, italics, etc.) can be activated by sending the printer [CONTROL] characters or a string of characters beginning with the ESCape character. Press the [ESC] key twice to get the ESCape character to print on the screen—it looks like a squiggle. You can put these characters directly into your program to be sent to the printer by using the **LPRINT** command.

But it's usually better to use the ATASCII code instead, especially if you want to dump a program listing to the printer. That's because most printers can't print the ESCape character—they just print a space. And the [CONTROL] characters, instead of printing out as part of the program listing, may activate the appropriate feature of your printer, inserting italics, underline, page feeds and other unwanted effects into the middle of your listing. For example, to send ESCape N to your printer, you could use:

```
10 LPRINT CHR$(27);CHR$(78)
```

The ATASCII code for ESCape is 27. Your printed listing of the program won't be affected and the statement will print out perfectly.

The opposite of the CHR$ command is **ASC** (from ASCII). It converts characters back to their ATASCII code:

```
10 A=ASC("C"):PRINT A
```

This prints 67, the ATASCII code for C. Quotes" "are needed with the ASC command, because ASC operates on a string. You will remember from Lesson 10 (January 1987) that "C" is considered a string constant. If you use a string variable like A$, the quotes are not needed:

```
10 DIM A$(1):A$=CHR$(67):B=ASC(A$)
```

A string like A$ can be defined in terms of CHR$. If you type PRINT A$, you would get the letter C, because 67 is the ATASCII code for C. You can define a string which has more than one element using CHR$:

```
10 DIM A$(4)

20 FOR LOOP=1 TO 4:READ Q

30 A$(LOOP,LOOP)=CHR$(Q)

40 NEXT LOOP

50 DATA 65,66,67,68

60 PRINT A$:REM Prints "ABCD"
```

If you PRINT ASC(A$), you will get 65, which is the ATASCII code for the first letter in string A$. ASC ignores the rest of the string.

PEEK AND POKE

There's 64K memory contained in the most widely used Atari 8-bit computer models—such as the 800, 800XL, 1200XL and 65XE models. (The Atari 400 and 600XL have 16K, the 130XE is rated at 128K.) This 64K memory actually consists of 65,536 **memory location** "boxes" numbered from 0 to 65535.

Each memory location can contain a number between 0 and 255. Often the value of the number in a particular memory location is important because it can give you valuable information. You use the **PEEK** command to tell you what number (0-255) is stored in a particular memory location:

```
10 A=PEEK(710)
```

In this statement, the value of the number stored in memory location 710 is placed into variable A.

An example of this process can be seen in this month's listing. Your Atari screen displays a particular section of computer memory, known as **screen memory**. Each character you see (including blanks) represents a number stored in one of the screen memory locations. Your Atari translates the number to a character and puts it on the screen.

By using PEEK, as in line 3010 of this month's Listing 1, NEWOWN11.BAS, we can see what number is stored in any memory location. PEEK will work with any memory location in your computer.

The number in screen memory, however, is not necessarily the ATASCII value of the character you see on the screen. Your Atari uses another set of codes for this purpose which are related to the ATASCII codes. The subroutine at line 3100 converts these values returned by the PEEK statement to ATASCII values so they can be sent to your printer.

The opposite of reading a number from a memory location is placing your own number there—using the **POKE** command:

```
10 POKE 710,66
```

This puts 66 into memory location 710. POKE is a very powerful and *dangerous* statement. You can do wonderful things like change screen colors, control sound, or display different portions of memory on your screen. (The above statement, for example, will change your screen color from blue to red.) But if you put the wrong number into the wrong memory location, your program may lock up!

You can tell you're suffering from a lock-up when the keyboard refuses to respond—and sometimes even pressing [RESET] doesn't bring it back. Then you'll have to turn off the computer, losing everything in memory. This is why you should always SAVE your latest version of a program before you RUN it.

You may POKE any number between 0 and 255 into a memory location. Attempting to POKE a number outside that range causes an error. Some memory locations will not accept the value you POKE into them. Typically, these are locations in the computer's ROM (Read Only Memory) which cannot be modified. No error occurs if

continued on page 62

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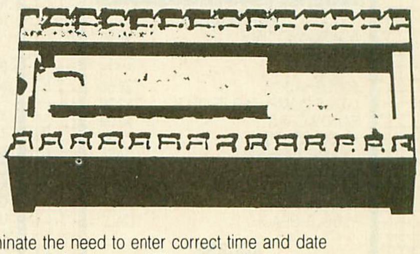
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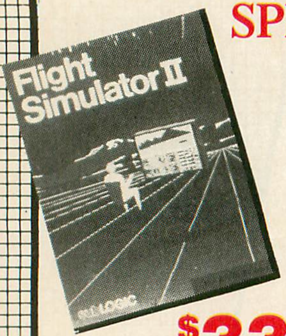
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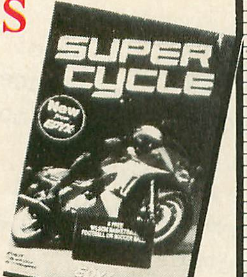
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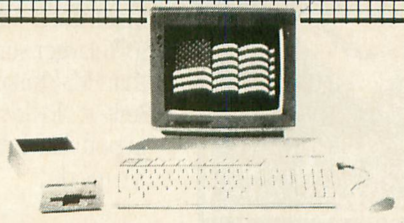
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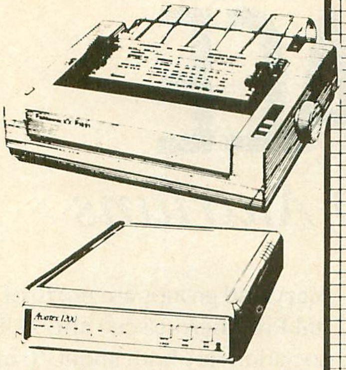
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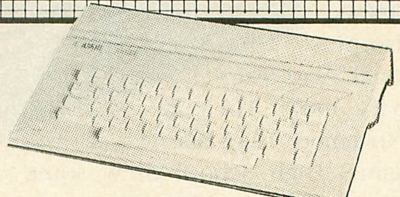
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BY GREGG PEARLMAN, ANTIC JUNIOR EDITOR

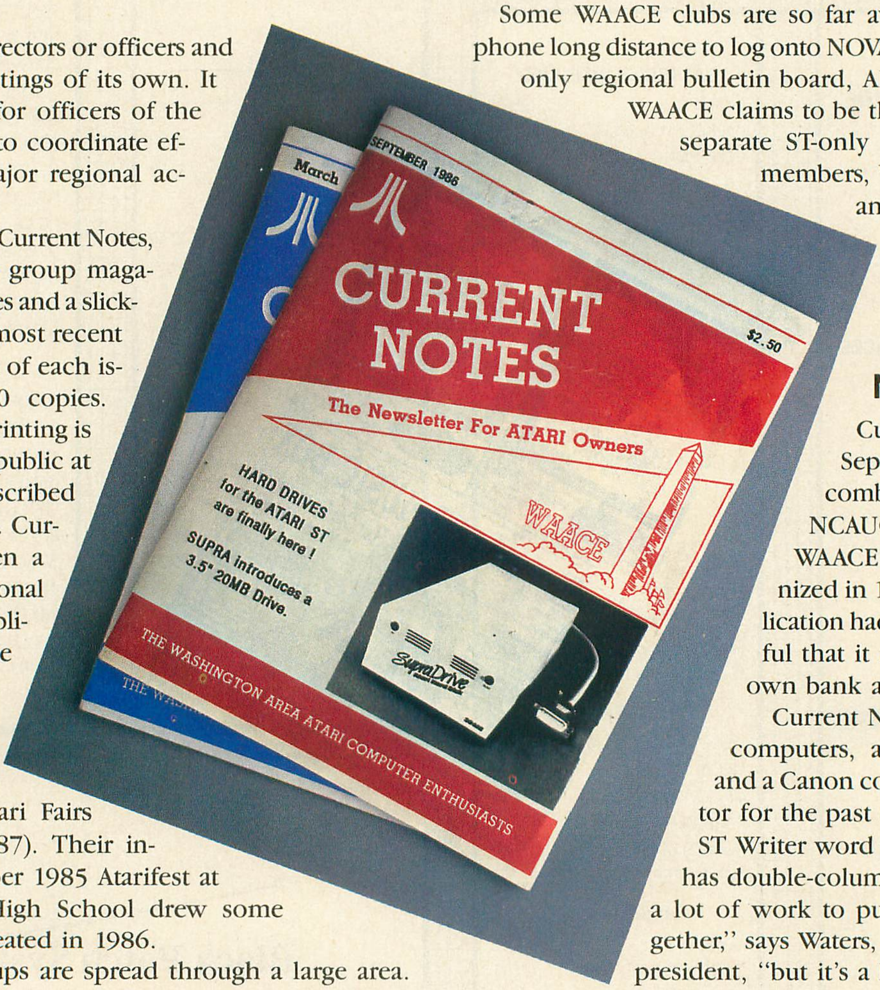
WAACE

D.C.'s 1,500 Atarians

WAACE, the Washington Area Atari Computer Enthusiasts, is a pioneering regional federation of nine Atari users groups, serving some 1,500 members in the District of Columbia, Maryland and Virginia.

WAACE has no directors or officers and it doesn't hold meetings of its own. It exists as a vehicle for officers of the independent clubs to coordinate efforts for several major regional activities.

WAACE publishes Current Notes, an impressive users group magazine that had 68 pages and a slick-paper cover for its most recent issue. The print run of each issue is some 3,000 copies. Nearly half of the printing is sold to the general public at local stores, or subscribed to by non-members. Current Notes has been a model for other regional Atari users group publications such as The Atari Journal in South Florida, spearheaded by DAUG.



Mary Rhomberg Lavery

WAACE also pioneered regional Atari Fairs (**Antic**, January 1987). Their independent November 1985 Atarifest at Fairfax (Virginia) High School drew some 2,000 and was repeated in 1986.

The WAACE groups are spread through a large area. NCAUG, the National Capitol Atari Users Group, meets in downtown Washington D.C. The Northern Virginia group, NOVATARI, meets in Springfield, 10 miles south. NOVATARI is the largest WAACE club, with 550 members. Six local NOVATARI chapters—Burke, Greenbriar, Mt. Vernon/Hybla Valley, Reston, Sterling and Vienna—hold their own monthly meetings too.

WACUG, the Woodbridge, Virginia group, meets 25 miles south of downtown D.C. The Frederick, Virginia group, FACE, is 30 miles away in another direction. The Maryland groups are *north* of Washington D.C. CPM (Capital Pro Micro-Users) and AURA (Atari Users Regional Association) are both about 10 miles from the Capitol. Southern Maryland's SMAUG is 30 miles northward.

Some WAACE clubs are so far away that they must phone long distance to log onto NOVATARI's subscription-only regional bulletin board, ARMUDIC.

WAACE claims to be the home of the first separate ST-only clubs. Now at 275 members, VAST began in 1985 and is still officially NOVATARI'S ST SIG. EAST covers Southern Maryland.

CURRENT NOTES

Current Notes began in September, 1981 as the combined newsletter of NCAUG and NOVATARI. WAACE was actually organized in 1985, when the publication had become so successful that it needed to set up its own bank account.

Current Notes has its own ST computers, a KISS laser printer and a Canon copier. Joe Waters, editor for the past three years, uses the ST Writer word processor because it has double-column printing. "It takes a lot of work to put Current Notes together," says Waters, a former NOVATARI president, "but it's a lot easier when you have a finished page roll off the laser printer in 10 or 15 seconds."

ATARIFEST

WAACE originated the term Atarifest because their users fair almost coincided with the popular local Oktoberfests. Fairfax High School let WAACE use 24 rooms of the building—with the proviso that no admission be charged. Thus the whole affair was free to the public, but WAACE

continued on next page

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NEW OWNERS COLUMN
continued from page 56

you, do this, but the number you put into the memory location simply won't be there when you PEEK it.

TYPE-IN CALENDAR

This month's listing is a Weekly Calendar Planner. Type in Listing 1, NEWOWN11.BAS, check it with TYPO II and SAVE a copy before you RUN it.

From the main menu, you can choose any month of any year. You'll be presented with each week, so you can jot down appointments and other things-to-do for each day. Note that you cannot over-write the month and day/date appearing every three lines.

You can save the month's data to disk, or recall data you saved during an earlier session. You can erase old months from the disk. From the screen you can dump any week to the printer—two weeks will fit on each sheet of paper. You can also proceed to the next week without printing. When you reach the end of the month, you'll cycle around to the first week again. The prompts are self-explanatory in the main menu and the data screens.

This program makes extensive use of CHR$ (and string manipulation, which was covered in last month's lesson). It also uses PEEK as a fast way to read the screen. I stayed away from fancy graphics in the printer output, so just about any printer should be able to use the program, including letter-quality printers which have no graphics at all.

Listing on page 97

WAACE
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made money on vendor booths and disk library sales.

THE BBS

The name of NOVATARI's subscription bulletin board, ARMUDIC, was taken from the letters of its *original* phone number. (The current phone number is (703) 569-8305.) NOVATARI makes the BBS available to everybody—for a small fee. Sysop Ted Bell has made ARMUDIC into one of the better and more popular bulletin boards in the area. There are plenty of subscribers and you can't log on otherwise. No pirated software is allowed on the BBS.

NOVATARI SURVEY

Antic has prepared a survey which will be completed by each Users Group of the Month, in order to make this new feature even more useful. The following information was provided by NOVATARI president Ed Seward.

In a poll of NOVATARI members, 58% primarily use 800, 800XL or 130XE computers, 30% use 520STs (Seward reports a trend toward 1Mb upgrades) and 10% use 1040STs. Only 1% have hard disks, but everyone who uses an 8-bit computer has a disk drive.

The most popular 8-bit drives are the Atari 1050, Indus GT and Atari 810. Of ST users, 65% have single-sided drives, 35% have double-sided drives. Panasonic 1091 printers are used by 30% of the members.

Seward said that the most popular modems, used almost equally, are the Atari 1030/XM301, Hayes 1200 Smartmodem and Avatex 1200. More than 99% of ST owners with modems use a 1200-baud modem.

Among programmers, the top three 8-bit languages are ACTION!, BASIC XL and assembler. ST users favor Pascal—almost exclusively Personal Pascal—C and assembly language. Of those who build hardware projects, 5% modify their systems themselves.

The kinds of software most widely used by members are ranked here in order of importance:

1. Word processing
2. Communications
3. Programming
4. Business/Financial
5. Education

WAACE STATISTICS

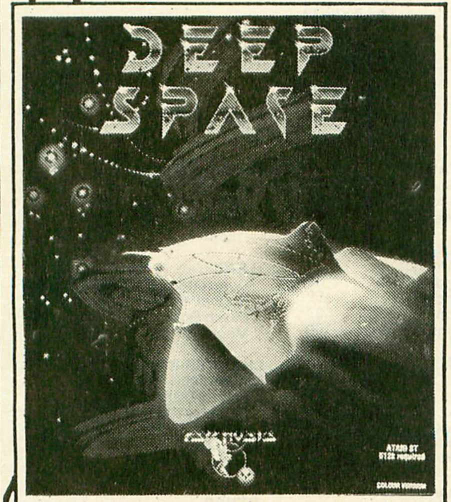
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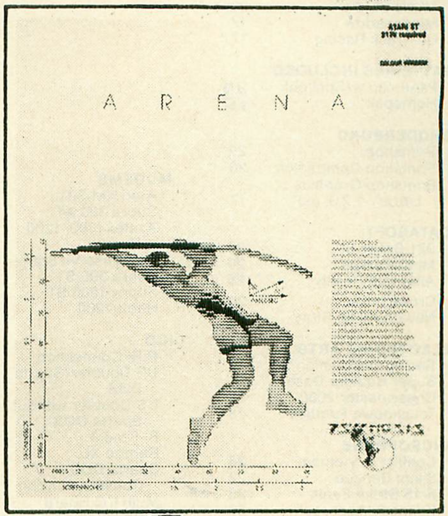


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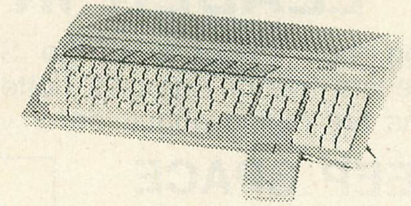
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ANTIC FEBRUARY 1987



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BY PATRICK BASS, ANTIC ST PROGRAM EDITOR

1ST WORD PRINTER DRIVERS

How to make them

As more and more ST workstations show up at **Antic's** office, I've been called upon to make 1st Word printer drivers for a number of different brands of printers. It's really not hard—if you have created printer drivers for word processing software before and are familiar with control codes expressed in hexadecimal numbers.

But just in case you don't meet all the above qualifications, the following article will teach you how to build your own printer drivers for the 1st Word software that's currently packaged with every ST. For a sample printer, we chose the Gemini 10X—which ranked first in popularity with Atari owners in **Antic's** February, 1986 survey.

Why does 1st Word need printer drivers? Well, different printers often need different instructions to get the same job done. For example, to switch on **boldface**, Printer A might want an escape character followed by the letter E. But Printer B wants an escape character followed by a Z. Printer C wants another character sequence, and so on. So what can we do about this Printing Tower of Babel?

EPSON SALTS

Epson did a lot to cure the communications gap by introducing a printer that everybody wanted to copy. As a result, many well-known printers—including the Gemini 10X— are "Epson-compatible." This means they *should* respond to the same control codes that Epson printers respond to. However, the harsh reality is that most of these compatible printers are only 80-90% Epson compatible. You usually won't notice any difference. But eventually you'll run into character styles which won't print correctly no matter how hard you try. This is the time to create your own 1st Word printer driver.

1st Word will take your editing commands like "start boldface" and save them along with your document. When it comes time to print the file, and 1st Word runs across an embedded command, the word processor will consult its Printer Configuration File (printer driver) to determine which *control character sequence* to issue for that particular command.

To create a printer driver for 1st Word, you'll need the manual that came with your printer and several special files from your 1st Word disk. From your 1st Word PRINTER folder, you'll need INSTALL.PRG, which actually creates the finished configuration file, and ASCII.HEX, which is where you answer the prompts to customize your printer driver. INSTALL.PRG will accept a .HEX file and put out a .DOT file.

BUILDING DRIVERS

Double-click on 1st Word. When the file selector box appears, click on the ASCII.HEX file from the PRINTER folder. When the file loads, you'll see the Teletype Printer Driver header. Don't worry, we're about to fix that. You may change or delete the header message if you desire. Everything on a line *after* an asterisk in the printer configuration file is ignored, like REMarks in BASIC.

The first line you'll come to which doesn't have an asterisk on it is: NAME OF PRINTER. Type in GEMINI 10X and press [RETURN].

Next we find a block of text titled MISCELLANEOUS CONFIGURABLE VARIABLES. A row of six zeros is beneath the title. The first selection determines the type of printer used. If it is a zero, 1st Word assumes that a dot-matrix printer is connected and ignores the next five numbers. Since the Gemini 10X *is* a dot-matrix printer, we leave all six zero entries as they are.

Now we come to where you'll need your printer manual. Below the Configurable Variables, we find PRINTER CHARACTERISTICS, which is the section we actually need to change. Let's compare the top two lines of *Figure 1* to see how they differ.

continued on next page

000 = $00	032 = $20	064 = $40	096 = $60	128 = $80	160 = $A0	192 = $C0	224 = $E0
001 = $01	033 = $21	065 = $41	097 = $61	129 = $81	161 = $A1	193 = $C1	225 = $E1
002 = $02	034 = $22	066 = $42	098 = $62	130 = $82	162 = $A2	194 = $C2	226 = $E2
003 = $03	035 = $23	067 = $43	099 = $63	131 = $83	163 = $A3	195 = $C3	227 = $E3
004 = $04	036 = $24	068 = $44	100 = $64	132 = $84	164 = $A4	196 = $C4	228 = $E4
005 = $05	037 = $25	069 = $45	101 = $65	133 = $85	165 = $A5	197 = $C5	229 = $E5
006 = $06	038 = $26	070 = $46	102 = $66	134 = $86	166 = $A6	198 = $C6	230 = $E6
007 = $07	039 = $27	071 = $47	103 = $67	135 = $87	167 = $A7	199 = $C7	231 = $E7
008 = $08	040 = $28	072 = $48	104 = $68	136 = $88	168 = $A8	200 = $C8	232 = $E8
009 = $09	041 = $29	073 = $49	105 = $69	137 = $89	169 = $A9	201 = $C9	233 = $E9
010 = $0A	042 = $2A	074 = $4A	106 = $6A	138 = $8A	170 = $AA	202 = $CA	234 = $EA
011 = $0B	043 = $2B	075 = $4B	107 = $6B	139 = $8B	171 = $AB	203 = $CB	235 = $EB
012 = $0C	044 = $2C	076 = $4C	108 = $6C	140 = $8C	172 = $AC	204 = $CC	236 = $EC
013 = $0D	045 = $2D	077 = $4D	109 = $6D	141 = $8D	173 = $AD	205 = $CD	237 = $ED
014 = $0E	046 = $2E	078 = $4E	110 = $6E	142 = $8E	174 = $AE	206 = $CE	238 = $EE
015 = $0F	047 = $2F	079 = $4F	111 = $6F	143 = $8F	175 = $AF	207 = $CF	239 = $EF
016 = $10	048 = $30	080 = $50	112 = $70	144 = $90	176 = $B0	208 = $D0	240 = $F0
017 = $11	049 = $31	081 = $51	113 = $71	145 = $91	177 = $B1	209 = $D1	241 = $F1
018 = $12	050 = $32	082 = $52	114 = $72	146 = $92	178 = $B2	210 = $D2	242 = $F2
019 = $13	051 = $33	083 = $53	115 = $73	147 = $93	179 = $B3	211 = $D3	243 = $F3
020 = $14	052 = $34	084 = $54	116 = $74	148 = $94	180 = $B4	212 = $D4	244 = $F4
021 = $15	053 = $35	085 = $55	117 = $75	149 = $95	181 = $B5	213 = $D5	245 = $F5
022 = $16	054 = $36	086 = $56	118 = $76	150 = $96	182 = $B6	214 = $D6	246 = $F6
023 = $17	055 = $37	087 = $57	119 = $77	151 = $97	183 = $B7	215 = $D7	247 = $F7
024 = $18	056 = $38	088 = $58	120 = $78	152 = $98	184 = $B8	216 = $D8	248 = $F8
025 = $19	057 = $39	089 = $59	121 = $79	153 = $99	185 = $B9	217 = $D9	249 = $F9
026 = $1A	058 = $3A	090 = $5A	122 = $7A	154 = $9A	186 = $BA	218 = $DA	250 = $FA
027 = $1B	059 = $3B	091 = $5B	123 = $7B	155 = $9B	187 = $BB	219 = $DB	251 = $FB
028 = $1C	060 = $3C	092 = $5C	124 = $7C	156 = $9C	188 = $BC	220 = $DC	252 = $FC
029 = $1D	061 = $3D	093 = $5D	125 = $7D	157 = $9D	189 = $BD	221 = $DD	253 = $FD
030 = $1E	062 = $3E	094 = $5E	126 = $7E	158 = $9E	190 = $BE	222 = $DE	254 = $FE
031 = $1F	063 = $3F	095 = $5F	127 = $7F	159 = $9F	191 = $BF	223 = $DF	255 = $FF

Figure 2 Decimal to hexadecimal number conversion chart

<u>ALICE IN WONDERLAND</u>

"Oh, don't bother *me* ," said the Duchess; I never could abide figures!" And with that she began nursing her child again, singing a sort of lullaby to it as she did so, and giving it a violent shake at the end of every line:

"Speak roughly to your little boy,
And beat him when he sneezes
He only does it to annoy,
Because he knows it teases."

CHORUS
(In which the cook and the baby joined):
" **Wow !** **Wow !** **Wow !** "

Figure 3 Sample printout using Gemini 10X configuration file.

The top line has an asterisk, a zero, a few spaces, another asterisk and the words Character Width. The first asterisk tells us this line is a comment and is not active. Next, the zero is the number of the control code—in *hexadecimal*— recognized by 1st Word. The final words describe what control code this line contains. This line is not active because 1st Word has no control code zero.

The next line down *is* a recognized control code, so it doesn't start with an asterisk. It starts with control code one (1), followed by the ASCII codes—in hexadecimal—for Carriage Return ($0D) and Linefeed ($0A), separated by commas. This means every time 1st Word runs across its internal command one, it will output not a number 1, but a carriage return and line feed character.

```
* 0                          * Character width
1, D, A                      * Linefeed WITH return
* 2                          * Forward print
* 3                          * Reverse print
* 4                          * Vertical tab to line
* 5                          * Absolute horizontal tab
6, 1B, 45                    * Draft bold on
7, 1B, 46                    * Draft bold off
8, 1B, 47                    * Near Letter Quality (NLQ)
                               bold on
9, 1B, 48                    * NLQ bold off
A, 1B, 34                    * Draft italic on
B, 1B, 35                    * Draft italic off
C, 1B, 34, 1B, 47            * NLQ italic on
D, 1B, 48, 1B, 35            * NLQ italic off
* E                          * Draft light on
* F                          * Draft light off
10, 1B, 46                   * NLQ light on
11, 1B, 45                   * NLQ light off
12, 1B, 53, 0                * Draft superscript on
13, 1B, 54                   * Draft superscript off
14, 1B, 47, 1B, 53, 0        * NLQ superscript on
15, 1B, 54, 1B, 47           * NLQ superscript off
16, 1B, 53, 1                * Draft subscript on
17, 1B, 54                   * Draft subscript off
18, 1B, 47, 1B, 53, 1        * NLQ subscript on
19, 1B, 54, 1B, 47           * NLQ subscript off
1A, 1B, 2D, 1                * Draft underline on
1B, 1B, 2D, 0                * Draft underline off
1C, 1B, 2D, 1                * NLQ underline on
1D, 1B, 2D, 0                * NLQ underline off
1E, C                        * Formfeed
1F, 12                       * Horizontal initialisation
* 20                         * Vertical initialisation
21, 1B, 40                   * Termination: printer reset
0                            * NULL termination byte
```

Figure 1 1st Word configuration file for Gemini 10X printer.

INSTALLATION

Figure 1 shows the finished Gemini 10X configuration file. The Near Letter Quality (NLQ) control sequences here refer to double-strike printing. If you own a Gemini 10X printer, you could use this file simply by changing the lines

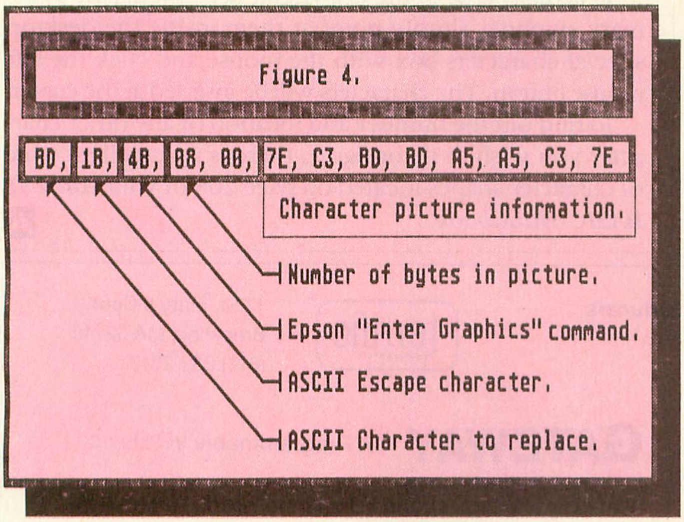
in your ASCII.HEX file to match the example. When you finish typing the corrections, SAVE your finished file to disk as GEMINI10.HEX.

Locate and double-click on INSTALL.PRG, which will power-up asking for the .HEX file to install. Double-click on GEMINI10.HEX and sit back. In 30 seconds or less, INSTALL.PRG will finish and you should find GEMINI10.DOT on your desktop. Rename GEMINI10.DOT as 1st_PRNT .DOT and copy it to your 1st Word disk for automatic loading along with the rest of the program.

EXTRA HELP

To build a driver for your own printer, follow the general process described above—but answer 1st Word's prompts with the appropriate control codes given in your own printer manual.

Figure 2 is a Decimal To Hexadecimal Conversion Chart. It will help you find the proper hex numbers to insert in your own printer drivers. The extra zeros and dollar signs



are simply programming conventions. For example, the entry 042 = $2A just means that decimal number 42 is 2A in hexadecimal.

If you have access to CompuServe, there are many different configuration .HEX files all ready for downloading from the DL (Data Library) section of ATARI16. Just type GO ATARI16 when you log onto CompuServe, and then BROwse DL0, DL3, and DL5.

TRANSLATION TABLE

The second half of the 1st Word printer driver file is called the Translation Table. Although we don't *need* to edit this section to create our Gemini 10X printer driver, let's explore what it controls.

To do this, I'll demonstrate how to convince the Gemini 10X to print the Copyright, Registered and Trademark symbols.

First, we need to make it clear exactly where the two different sections of the printer driver come into action. Let's follow what happens when 1st Word attempts to print a file.

FIRST HALF

Each time 1st Word gets another character from the file to print, it first tries to determine if the character is an embedded command for style or format. These characters normally do *not* show up onscreen, but rather they control the displayed onscreen characters in special typefaces such as boldface or italics.

1st Word starts by comparing the character to the entries in the top half of the printer driver. If the character is indeed a command, the command itself is *not* issued to the printer. Instead, the sequence of bytes in the printer driver table that *follow* the command character are issued to the printer.

This is the section of the printer driver where we typed in the commands teaching the Gemini 10X how to boldface or underline.

SECOND HALF

Just before 1st Word attempts to output a character to the printer, it scans the bottom half of the printer driver (the Translation Table) for a match. If no match is found, the character is transferred unmolested to the printer.

However, if 1st Word *does* find a match, the character in question is not issued. Instead, the byte sequence which follows the character byte in the Translation Table is issued to the printer.

In short, the top half of the printer driver file filters characters going between the file and 1st Word, while the bottom half filters characters between 1st Word and the Printer.

Figure 4 is a DEGAS diagram showing what each element does in a sample line at the bottom half of your printer driver. In this case, the line will create the Copyright symbol.

What we need to do here is interesting. Since the Gemini 10X doesn't have the Copyright, Registered and Trademark Symbols burned into its character ROM, we'll teach the Gemini 10X to slip into graphics mode and *draw* a picture of the needed characters whenever we output them.

Keep in mind that all numbers in the printer driver file are *hexadecimal*. In *Figure 4*, we see that the first number on a line must belong to the character we wish to translate. The Copyright symbol is Atari ST character number $BD, so the first number on the line is $BD. When 1st Word finds this number, it knows that character $BD must be translated and starts outputting the rest of the bytes on the line.

The second number in the line is an ASCII [ESCAPE] character ($1B) which informs the Gemini 10X that a command follows. The third number in the line ($4B) is the command that Epson printers use to enter graphics mode.

At this point, the printer will want to know how many bytes of picture information to expect to recieve. Consequently, the next two bytes into the translation table are $08, $00, which tells the printer to expect (8+(0*256)) bytes of picture information. The last eight bytes on the line are the image of the character itself, copied from the character set located in TOS ROM. continued on next page

FIGURE 5
Translation Table

```
BD,1B,4B,08,00,7E,C3,BD,BD,A5,A5,C3,7E
BE,1B,4B,08,00,7E,C3,BD,A9,AD,B5,C3,7E
BF,1B,4B,08,00,80,F8,F8,8F,1C,0F,1C,0F
00
```

WHAT YOU NEED

Figure 5 is a listing of the Translation Table needed to get your Gemini 10X to print the three symbols we've been discussing. The first line controls the Copyright symbol, the second delivers the Registered symbol and the third is the Trademark symbol. The last line consists of a double zero, which should be kept. The table *must* be zero-terminated.

To get these characters to print, create your printer driver according to instructions given earlier in this article. But this time, include the four lines of our Translation Table (*Figure 5*). Install the new printer driver in the same directory where you have 1st Word.

To actually type in the Copyright, Registered, and Trademark symbols, simply point at them inside the desktop special characters box with the mouse and click the left mouse button. The characters will be inserted at the cursor.

To find out the number and location of any other character you wish to reconfigure, there is an excellent table of character shapes located on page 208 of your *Atari ST BASIC Handbook.*

BY BRAD ROBILLARD

PRINTSET

Automatic printer control codes

PrintSet is a short utility routine that automatically sends control codes to a printer when you turn your ST on. You can select compressed mode, no linefeeds, bold, italics... whatever you like. In fact, you can send any number of codes at once.

Simply edit PrintSet's assembly language source code to include the control codes you need, then reassemble. This will produce an executable program that automatically sets up a printer to your specifications.

You'll need to edit the last line in the source code. It has the label **pcodes**. Currently, this line contains the Epson printer codes to reset a printer. The format of the line is [n,n,...n,0], where *n* is a decimal control code. Notice the list *must* end with a zero. In our example line, the number 27 is the [ESCAPE] character, the number 64 is the [@] symbol (which means "reset" to Epson printers) and the list ends with a zero.

TYPING IT IN

Listing 1, PSET.S, is written in 68000 assembly language, and can be implemented using any assembler which runs on the ST—including C language assemblers. Carefully type in the program and SAVE a copy to disk. The procedure to properly assemble the program is somewhat different for different assemblers. So we will describe what is needed using AS68.PRG, the 68000 assembler included with the Atari ST Developers Kit.

On your disk, you'll need the following 10 programs:

1. AS68 .PRG
2. AS68SYMB.DAT
3. BATCH .TTP
4. LINK68 .PRG
5. OSBIND .O
6. RELMOD .O
7. RM .PRG
8. WAIT .PRG
9. ASM .BAT
10. PSET .S

The top eight programs are part of the Atari ST Developers Kit. And you just typed in number 10, PSET.S. But where does ASM.BAT, number 9, come from?

You'll need to create your own ASM.BAT batch file, but don't worry, it's quite short. The file consists of the following lines of code:

```
as68 -l -u %1.s
link68[ u,s ] %1.68k=%1,osbind
rm %1.o
relmod %1.68k %1.prg
rm %1.68k
wait
```

Note that the -l in the first line is a lower-case letter l—all other similar-looking characters are number ones. When finished, save the above file to disk as ASM.BAT. This is the file which will instruct the BATCH program how to assemble and link the PSET program together.

With all the needed files on one disk, preferably a RAMdisk, double-click on BATCH.TTP. In the resulting dialog box, type in ASM PSET without the .s extender. AS68 will assemble and LINK68 will link your resulting .o file together with OSBIND.O to create a finished .PRG program. When finished, you'll find PSET.PRG on your desktop. This is your PrintSet program.

HOW IT WORKS

The top four lines of Listing 1 and any line starting with an asterisk [*] are comments. This program has a very short equates section with just three lines. The program really begins at the label **start**, and begins by calculating the final address of where we keep the printer control codes, then placing that address into address register zero (a0). This creates a *pointer* to the list of control codes to send.

Next, at **continue** we check to see if the end of the list of control codes

continued on next page

has been reached. The list ends with a zero, so we test the byte that a0 is pointing to. If the byte isn't a zero, we haven't reached the end yet, so we don't take the branch to **done**. Otherwise we place the character we're pointing at onto the stack and point to the next available character. Then we place the device number of the destination device on the stack, in this case the number of the printer, and jump into GEMDOS which will output the character we passed into it over to the device we selected.

If any errors occurred while we output the character, the negative error number is placed in register d0 and returned. When we do return from GEMDOS we need to add four bytes to the stack, because we pushed four bytes before we called it. Then we check for errors by testing the number inside register d0. If no errors occurred, the value in d0 is zero and we branch back up to continue getting the next character in line.

On printer error, or when we've reached the end of the line to output, we end up at **done**, which will exit this application and return to the desktop by placing the exit application opcode on the stack and jumping into GEMDOS. If it works properly, we should never return from this call, but just in case we do, we clean up the stack and return to the main program.

Select compressed mode, no linefeeds, bold, italics . . . whatever you like

The last thing in the file is **pcodes**. where we keep the list of characters to actually output to the printer. Notice this demonstration code only sends the standard Epson reset command. You may place any amount of printer initialization codes here. Just make sure the list ends with a zero.

AUTO FOLDERS

If you change your printer's attributes on a regular basis, you might find it handy to place the PrintSet program in an AUTO folder. That way, every time you boot up your ST, PrintSet will be run automatically. Please note that in this case, the program must be installed as a GEM application (.prg extension). To set up the AUTO folder, create a new folder on your bootup disk called AUTO and copy the PrintSet program to the folder. Only programs which make no calls to GEM may be run from within an AUTO folder.

Brad Robillard is a student at the University of Western Ontario. He is working towards dual degrees in music theory and computer science.

Listing on page 109

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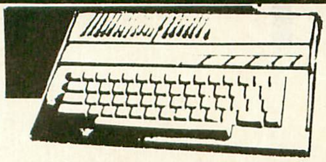
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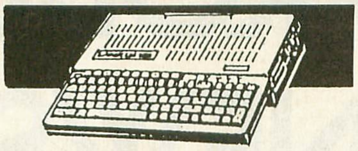
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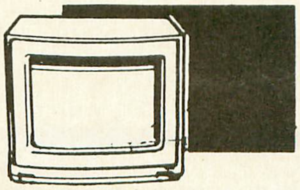
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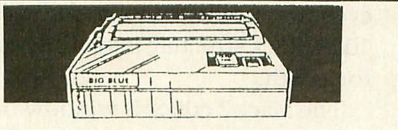
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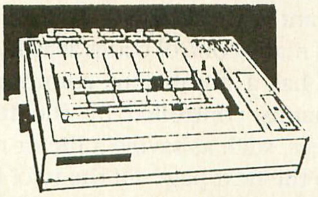
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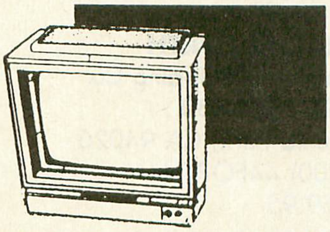
This is the affordable printer you have been waiting for! This 8½" letter size, 80 column dot matrix, heat transfer printer features upper and lower case, underline, graphics, word processing, and much more. List $199.00 **SALE $39.95**

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The Comstar Aero 160 gives you a 10" carriage, 150-170 CPS, 9x9 dot matrix with double strike capability for 18x18 dot matrix (*near letter quality), high resolution bit image (120x144 dot matrix), underline, back spacing, left and right margin setting, true lower descenders with super and subscripts, prints standard, block graphics and special characters. It gives you print quality and features found on printers costing twice as much! (Centronics Parrallel Interface) List $499.00 **SALE $199.00** (*with Xetec interface)



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ST PRODUCT NEWS

ST Reviews

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MACH2 FORTH
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CIRCLE **253** ON READER SERVICE CARD

Reviewed by Sol Guber

Forth is a strange combination of computer language and religion. You gotta believe in Forth before you can program it.

Mach2 Forth and **MultiForth** are both written by believers. This comes through on every page of both manuals. Both versions are good, solid implementations that anyone would be proud of. However, each of the Forths has drawbacks that become evident when you see how the other version does the same thing.

Forth is a language that you define as you go along. You don't write programs, but rather you make tools that finally let the computer perform an action. It's very fast and makes compact code. Unlike C, Pascal, or Modula-2, no linking or compiling programs are involved in making your final program. All Forth needs is an editor and an assembler.

MultiForth supplies EMACS, the standard editor found in other programs. It doesn't use the mouse or support GEM. You type in the name of the file to be edited and away it goes. EMACS uses the cursor controls and cryptic commands, and it supports multiple windows. MultiForth even has another editor to support the 1028 block structure initially designed for Forth.

The Mach2 editor is window-based and supports GEM and the typical menu bar. You just move to a spot you want with the cursor. It doesn't have as many control codes as EMACS, but it has a number of common commands controlled by the function keys, such as saving a file or moving to the next page. Of the two, I prefer the Mach2 editor, but I'd have been satisfied with EMACS if a better editor weren't available.

The two assemblers are similar. The MultiForth assembler has a slight edge overall and uses high-level control structures like BEGIN, IF, LOOP and reverse Polish syntax.

Forth prides itself on being a language that runs at blinding speed. Mach2 gives the sieve speed-test program on the disk and I rewrote it for MultiForth. Each Forth completed 10 run-throughs of the test in just over 5 1/2 seconds—or approximately one-half (.55) of a second apiece. Mach2 may have be slightly quicker, but it is a only a matter of milliseconds.

The next area of difference is support of GEM and AES. The ST is known for ease of use, and thus the programmer must spend much time and effort to make it easy with menus and icons and all the mouse controls. This requires BIOS, XBIOS, GEMDOS, AES and VDI functions—which are supported by both Forths.

Mach2 provides a 10-page listing of all functions supported, with additional information on the disk files. MultiForth does not explicitly give a listing of AES or VDI. There are generalized BIOS and XBIOS words and a listing of the kernel words at the end of the manual. The majority of the functions do seem to be present, but if you don't know the exact name used by MultiForth for a function, it's hard to find. However, the explanations for these functions is better in MultiForth.

A major problem with all versions of Forth is that there are so many words that have been defined to perform actions. These two Forths are no exception. MultiForth wins the points for the most words, with short complete definitions for each. Mach2, despite fewer predefined words, gives good examples of how to use them.

Mach2 supports multitasking of operations for the ST. MultiForth has stated that multitasking will be supported in the next revision. Mach2 has floating point numbers supported with words already present. MultiForth does not mention them. (This is a major schism in the Forth religion).

MultiForth comes with a nice loose-leaf binder containing many chapters separated by yellow sheets. The pages are not numbered consecu-

tively, and there is no index. Mach2 has a nice softcover book with an index and an end sheet with many kernel words. They have lots of details for the beginner, lots of details for the advanced programmer who needs to know how this Forth is different than other packages. However, there's no middle ground for the weekend programmer who has read several books on Forth but needs to know how to write useful programs.

To get around this, Mach2 has about 35 demo and utility programs while MultiForth has about 55. Studying the examples helps make up for the incompleteness of the manuals.

Which is better? That's hard to say. Both are very good. Neither would make you unhappy. Each could be better, but not by much. Mach2 is considerably less expensive. What should a programmer do? Flip a coin and learn to love the one you bought!

LITTLE COMPUTER PEOPLE

Activision Software
P.O. Box 7286
Mountain View, CA 94039
(415) 960-0410
$49.95

CIRCLE 258 ON READER SERVICE CARD

Reviewed by Sol & Rebecca Guber

Dear Winslow, Our Little Computer Person:

It is a pleasure to have you in our computer. Rebecca and I felt she needed a playmate and that you would fit the bill nicely. When we saw your wonderful house on the screen, we felt it was good addition to our neighborhood. It's the only one on the block with three levels. On the top floor is your den, where you watch television and type letters to us. There is a file cabinet where you keep all of your games that you play with us. (I wish that Rebecca could keep things so neat.)

I am still amazed at how real your house appears. The doors, cabinets and files open. The clock on the wall shows the real time, and the television and computer screens really work. We can tell where you are by the sound of your footsteps. They're loud on your hardwood floors, but we can't hear them on the carpet. It's even easy to tell the pattern of how you walk up the stairs. I'm glad you moved into the computer. It's lots of fun watching you, and I almost consider you a part of the family now. Just don't ask for an allowance.

Sol

Dear Winslow, My Little Computer Person:

I like you a lot too, but I think you are too cute. At first I really did not like you, but you are more friendly now. You even tap on the screen when you want to play. We play games like War, 21 and Poker (which my dad won't teach me) and we unscramble anagrams and discover the sentences.

The games are a little strange. In the sentence game you have to find famous sayings, but some words are missing, with just the first letter of the words being there as a hint. You must think I'm dumb, but with only 33 sentences to be discovered, it took less than a week to do them all. You must also think I'm real smart too, because the anagrams are really hard. How many third-graders know the word "bagatelle"? Words like cilium, axiom, idyll and hydra I had to look up in the dictionary.

I also think you cheat a little at 21. The cards are in strange positions and it's hard to tell what your score is and what my cards add up to. I was sure I had 21, but then *you* picked cards until you got 21 and said you were the winner. I'm not sure this is how to play. War is a good game, but after 10 minutes it gets bo-o-ring. But your comments seem to help a lot. I didn't play Poker, but my dad thinks it's all right.

I like the idea that you are living in my computer and that I have to take care of you and make sure that you have enough food and water. I must also make sure that there is food for the dog—I forget all about the dog. But whenever you write a letter to me, all you talk about is food and water. I wish you would talk about something else. I also wish I could control you with the mouse, but then my dad says the same thing about me.

Love,

Rebecca

ST SCRUNCH

Cherry Software
3415 East Fifth Street
Dayton, OH 45403
$14.95

CIRCLE 211 ON READER SERVICE CARD

Reviewed by Sol Guber

With **ST Scrunch** from Cherry Software, you can compact disk files and save them in less space, thereby packing more information onto the disk. You can also unscrunch a file back to its original form.

ST Scrunch uses a superset of the IBM 3780 BISYNC data transmission protocol to achieve compaction of about 5% for object files and about 30% for text files. This reduces the time needed to send large amounts of information over communication lines.

Pick a source drive, then a target drive, then scrunch!

ST Scrunch requires either two disk drives or a disk drive and a 360K RAMdisk. Easy to operate, it comes in either a GEM version or a command line version. You pick a source drive, then a target drive, then scrunch or unscrunch!

To use this utility properly, you should copy all the files you wish to scrunch onto a clean disk. All information on the disk will be scrunched. Note that if you have erased some files, the old information there will

continued on next page

also be reduced, even though the filenames have been removed from the directory. This might make a scrunched file longer than an unscrunched file. The scrunch operation also does not work on copy-protected disks.

On the disk with ST Scrunch are several printing utilities for Epson printers. With these you can vary the fonts, go to an enhanced mode and perform other useful operations by clicking on the proper choice in a dialog box. There are also two programs to toggle the verify option back and forth.

ST Scrunch works quickly and easily. If this is the kind of program you need, it's a good value.

DOS SHELL
MichTron Inc.
576 S. Telegraph
Pontiac, MI 48053
(313) 334-5700
$39.95
CIRCLE 236 ON READER SERVICE CARD

Reviewed by Sol Guber

MichTron Inc. has released a large number of utility programs for the ST. The three products covered in this review are of varying quality. The best value is **DOS Shell**, an excellent mimic of the popular MS-DOS operating system that gives you commands otherwise unavailable through GEM. **MichTron Utilities** ($59.95) is a collection of programs for manipulating disk information. **DFT** ($49.95) is a Direct File Transfer program that works between an IBM PC and an Atari ST—but requires a null modem cable not included in the package.

DOS Shell is a disk operating system for those who are tired of the mouse. The commands are similar to those in MS-DOS, which is used on IBM PCs and compatible computers. Instead of the mouse and icons, you can have a clear screen, a command line and a prompt with a blinking cursor.

I pulled out my IBM MS-DOS manual and looked through the section about operating commands. (The capital letters in the following commands are the official names.) General commands include HELP, Clear Screen, CHeckDisk, DATE, TIME, VERsion, VERIFY save, set PATH, RUN program and EXIT. The file manipulation commands include DIRectory, COPY files, DELete files, RENAME, TYPE file, CHANGE DIRectory, MaKeDIRectory, ReMoveDIRectory, TREE, PROMPT and SET Environment. There are also batch operation commands including ECHO, GOTO, IF, PAUSE, REMark, SHIFT, PIPES and FILTERS.

Most of the commands are self-explanatory, but some functions are unavailable with the present GEM system, and here is where DOS Shell really becomes valuable. If you want to list the directory on disk A to the printer, you'd type in DIR A:>>P:. To use the data in file text for your speller,

IBM-type disk operating system for users tired of the mouse

type RUN A:SPELLER<text—and you won't need to use the pop-up directory. With the use of PIPES, you can make a temporary file and use this file for data for another program.

The FILTER command displays a modified version of the data from a standard input device. The three filters include More, which stops at the bottom of a page; Sort, which alphabetizes information; and Find, which looks for information.

You can set up and run batch files with a series of commands. Batching lets you automatically run a group of programs by typing the name of the file containing multiple commands. You can perform common repeated operations all at once. For example, you could put in a batch file to initialize your printer, call up the RAMdisk, install the printer spooler, load a word processor and assign a disk drive for the results.

DOS Shell is unobtrusive and is not copy-protected, so you can put it on whatever disks you want to use it with. While many operations are easier with a mouse, this DOS allows more operations and is quite useful. It also makes it easier for your boss to believe that you are not just playing a game on the ST.

The MichTron Utilities package is an anthology of programs that manipulate disk information. You can search through files or disks, change file contents or attributes, restore deleted files, recover data or repair damaged disks. There is also a simple routine for copying entire disks, and a new formatting program that increases disk storage room by 10 percent.

One major use for this program is to examine and modify individual bytes. The information is displayed in both hexadecimal and ASCII format on the screen. To change a value in the file, point to the spot on the screen where you want to make a change, type in that change and save it back to the disk.

A second use is to recover files that have been accidentally deleted or corrupted. You check through each disk sector and decide if the information belongs in that file. This is mainly useful for text data and perhaps numbers, but such information is hard to discern in any sort of program files.

The last utility, DFT, is a direct file transfer program between an IBM PC and an ST. You connect the computers through their RS-232 ports with a null modem cable, which you can obtain by mail from MichTron or make by following the wiring diagram in the manual. DFT uses a disk for the ST and one for the IBM, and the program works in both directions. The speed of information transfer seems to be about 2400 baud, though I was unable to verify this.

I should point out that MichTron's guarantee and update policies are unusual. Defective disks are replaced free, while under warranty. If the program works but doesn't do what you need, you can return it and get credit for another program. This seems more than fair. However, minor updates cost $5 and for major revisions the cost is 15-20 percent of the original retail price.

ST New Products

by GREGG PEARLMAN, **Antic** Junior Editor

VIDEO DIGITIZER

Antic saw the **Print-Technik Video Digizer PRO** at Atari Corp. in October, 1986. We don't have PRO yet, but we eagerly await it. Resolution is 512 pixels horizontally, while vertical resolution depends on the source of the video signal. Once the picture is in memory, you can store it on disk and modify it with NEOchrome, DEGAS or Doodle. The object is digitized in black-and-white, but with a color monitor you can do almost anything to the picture, and you can print it in any size on a dot-matrix printer.

Among the other products announced by Print Technik are the **Meteostat Weather Satellite Receiving Station** which can read in 800×800 pixel weather satellite pictures in 16 gray levels and store them on disk. You can define an excerpt or print the picture in any size. The **Data Switch Box** can be used to connect a printer to the centronics port at the same time as the digitizer and the Meteostat receiver.

Print-Technik Munich, 8000 Munich 40, Nikolaistrasse 2, West Germany. 089/368197.

Haba Systems Ltd., Pier Road, North Feltham Trading Estate, Feltham, Middlesex, TW14 0TT, England. DEMO.

GENERAL LEDGER

Written in C, Synsoft's **General Ledger Program** features automatic double-entry accounting, automatic check writing and up to 500 active checking accounts. It works on color or monochrome monitors and on hard disk or floppies. Ledgers are automatically posted using data entered from the keyboard, and continuous error-checking insures database integrity.

$69.95. Synsoft, P.O. Box 561, Allen, TX 75002. (214) 727-2466. FINAL.
CIRCLE **262** ON READER SERVICE CARD

STAR FLEET 1

Star Fleet 1: The War Begins is available for the ST as well as Atari 8-bit computers. As an Alliance member, you're called upon to protect the outer regions against the Krellan and Zaldron empires and command a cruiser equipped with sophisticated weaponry.

$55. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. (415) 571-7171. PRESS.
CIRCLE **269** ON READER SERVICE CARD

LABELMASTER, FAST, EASYDRAW

The GEM-based **LabelMaster** ($39.95) lets you combine bit-mapped graphics with a sophisticated mailing list manager to produce labels with flashy graphics. Features include more than 100 on-disk designs, a graphics editor to create your own designs and print multi-color images.

FAST ($49.95) contains several useful programs in one desktop accessory, operating in any resolution. FAST inclues ST-DOS, which lets you perform common DOS commands without returning to the desktop; ST Editor, with search-and-replace and block editing; Card File, an electronic address book; and a calculator, calendar, ASCII table and clock.

Updated **EasyDraw Version 2.0** ($79.95) helps you create graphics, business charts, flow diagrams and technical illustrations. EasyDraw gives you a single GEM file format, metric and inch measurements, Change Arc and Arrange commands and automatic copy of objects between windows.

Migraph, 720 South 333rd Street, Suite 201, Federal Way, WA 98003. (206) 838-4677. PRESS.
CIRCLE **263** ON READER SERVICE CARD

ABACUS SOFTWARE AND BOOKS

PowerPlan ST ($79.95) is a 65,535×65,535-cell spreadsheet with a built-in calculator, a notepad and business graphics. Data can be summarized in pie charts, bar and line graphs and displayed simultaneously. The GEM-based program can use as many as seven windows and works on either a monochrome or color monitor.

AssemPro ($59.95), a machine language development package, features complete GEM-based interface, an integral editor with GEM and instruction mode reference online and interactive debugging and monitor.

The newest addition to Abacus' ST reference library, **ST Peeks & Pokes** ($16.95), has dozens of quick programming tips.

Abacus Software, P.O. Box 7219, Grand Rapids, MI 49510. (616) 241-5510. PRESS.
CIRCLE **265** ON READER SERVICE CARD

34.4-MEG HARD DISK

Berkeley Microsystems' 34.4 megabyte **BMS 3500 Hard Disk** ($1,950) is as much as 16 times faster than floppy drives and 25% faster than the Atari hard disk, with a 30 millisecond average seek time. A separate interface ($135) has a real-time clock/calendar with battery backup.

Berkeley Microsystems, 1107 El Centro Avenue, Oakland, CA 94602. (415) 530-3436. PRESS.

MIDI SOFTWARE 4

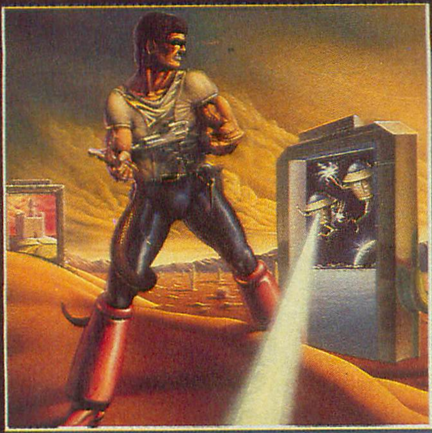
Metatrak, a 32-track software recording studio, connects any MIDI instruments with an ST. Metatrack offers fast real-time record, playback, overdub, rewind and fast-forward; 32 polyphonic independently-controlled tracks; and full track editing enabling you to combine, move, copy and erase any combination of the 32 tracks.

$99. MIDIsoft Corp., P.O. Box 1000, Bellevue, WA 98009. (206) 827-0750. PRESS.
CIRCLE **266** ON READER SERVICE CARD

An extensive MIDI music library is available from Micro-W Distributing for the ST containing recordings by Gershwin, Joplin and others. Each six-song disk costs $19.95.

Micro-W Distributing Inc., 1342B Route 23, Butler, NJ 07405. (201) 838-9027. FINAL.
CIRCLE **267** ON READER SERVICE CARD

continued on page 84



TIME BANDIT

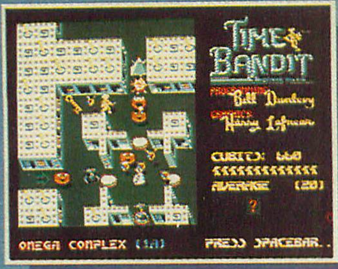
by Bill Dunlevy & Harry Lafnear

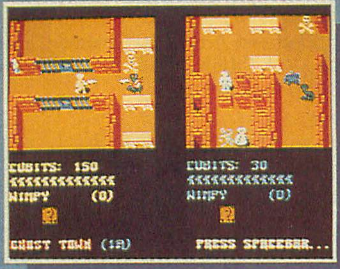
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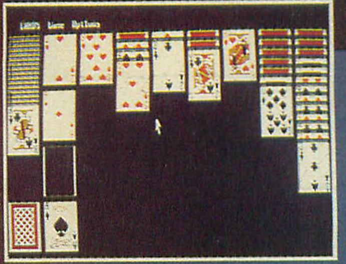
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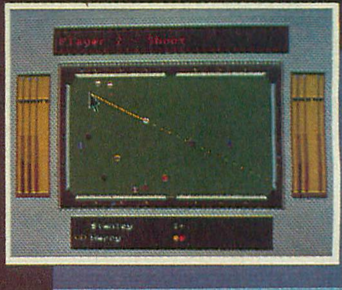
(Color monitor or television required) $39.95







Cards $39.95



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MAJOR MOTION

by Philip MacKenzie & Jeffrey Sorensen

Hunt enemy spies in this thrilling driving game. Cars try to smash you off the road, and the enemy helicopter is never far behind...

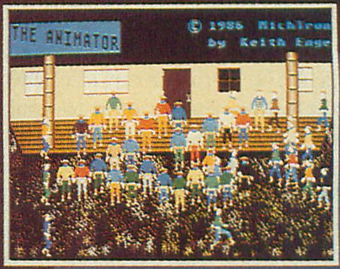
Race down highways, curves, ice, and even a waterway with islands and deadly reefs!

Force enemy cars off the road, or use your machine-guns. Missiles, smoke screens and other special weapons help you to survive.

(Color Monitor or television required) $39.95







Animator $39.95



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You don't need an ST to run high-powered software. Your Atari 400, 800, 800XL, 1200XL or 130XE can compute circles around others with these quality packages. – Don't let our low prices fool you – Super Quality doesn't have to be over priced.

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Your Atari Comes Alive – Introductory Price **$24.95**

DIGITIZING POWER

PARROT

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Our COMPUTEREYES and MAGNIPRINT II+ combination special lets you print your pictures in 16 shades of grey with incredible detail. Combine the features of MAGNIPRINT II+ and COMPUTEREYES for digitizing power that can't be beat. Koala Pad, Touch Tablet compatible.

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Free BONUS with every MAGNIPRINT II+ – PRINTALL prints your programs and files with all Atari inverse and graphics characters.

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ONLY **$22.95**

IMPERSONATOR

Cartridge to Disk copy system. Create running back-ups of any cartridge (up to 16K) on Disk. ONLY **$29.95**

THE Scanalyzer

Extract the programming secrets for any Atari program. Scanalyzer easily breaks through protection to let you list and study programs. Works with programs on Disk or Cartridge, finds hidden directories, detects copy protection methods and more. ONLY **$29.95**



PROTECT YOUR PROGRAMS AUTOMATICALLY COPY PROTECTION METHODS EXPOSED



Now the state of the art secrets of software copy protection, piracy, phone phreaking, and hacking are revealed. These comprehensive book and disk packages take you from a novice to an expert in this fast changing field. Everything you need to understand complex protection, and create your own custom methods. Topics include, Unstable Sectors (Phantom or Fuzzy Sectors), Forced CRC Errors, Overfilled Tracks, Short Sectoring, Hardware Data Keys, Cartridge Protection, Cassette Protection, Crackdown on Priates, New Laws Dealing with Piracy, Hacking, On-Line Security, Phone Phreaking, Building Black Boxes, Pirate Bulletin Boards Systems, Trojan Horse Programs, Logic Bombs, Self-Destructing programs, much, much more.

The disks included with these books contain powerful utilities to let you automatically protect your files. Features include;

- Automatic directory hiding
- Data encryption (stops pirates from changing your copyrights, etc.)
- Limited use option (makes the program self destruct after a limited number of runs)
- Password option (requires an 8 byte password before the program will run)
- Disk Protection check (have your program check disk protection before running)

Use these methods and more automatically, with no programming skills needed.

BOOK I and DISK I $24.95
BOOK II (Advanced protection) and DISK II $24.95
Special limited time offer – BOTH SETS for $39.95

ST NEW PRODUCTS
continued from page 81

ZOOMRACKS UPGRADE

Quickview Systems has updated **Zoomracks**, a database system based on a metaphor of timecard racks, allowing merging of two or more racks and "zooming in" on particular racks. **Zoomracks II** has a four-function calculator, mail-merge and report formatting. Data can be imported and exported from other software, including DEGAS. Zoomracks I and II both get improvements in: menu, online help commands, disk backup, rack loading and screen display. Current Zoomracks users can upgrade to II for $79.95.

$149.95. Quickview Systems, 146 Main Street, Suite 404, Los Altos, CA 94022. (415) 949-3000. FINAL.

CIRCLE 275 ON READER SERVICE CARD

PLAN AHEAD

With **Plan Ahead**, you'll do exactly that. The first of the three modules in this software package creates a Total Retirement Plan completely accounting for each individual's particular circumstances. Life Insurance Planning helps determine how much life insurance you'll need to provide for the family if you're unable to. And College Funding determines the savings needed for your children to have adequate funds for their chosen schools. The package costs $59.95, but each module is $29.95 and any two modules cost $49.95.

Advanced Financial Planning, 20922 Paseo Olma, El Toro, CA 92630. (714) 855-1578. PRESS.

CIRCLE 117 ON READER SERVICE CARD

FIRST BYTE TALK

The first products in First Byte's Talking Notebook Series have been released. **Speller Bee** improves children's spelling skills, providing practice routines, challenging games and simulated tests. After Speller Bee says each word, the child is asked to type it. Pre-schoolers will improve word-recognition skills, and older children can enter their own lists from school.

KidTalk, a talking word processor with exciting graphics, guides children in communicating ideas more effectively. Unlimited text-to-speech capabilities enable children to hear text spoken letter by letter, word by word or by sentence as they type. Children can write stories, proofread written materials and learn word processing skills. KidTalk includes both male and female voices and the ability to control speech variables including volume, pitch, tone and speech.

MathTalk lets children enter their own math problems and receive individualized graphic and spoken help specific to each problem from Professor Matt A. Matics—a "private tutor" who can help overcome difficulties with each problem entered.

First Shapes introduces Ted E. Bear, who teaches children about shapes and relative size. In the Toy Factory section of First Shapes, each child can use geometric shapes to build toys onscreen, from dolls to space ships.

$49.95 each. First Byte, 2845 Temple Avenue, Long Beach, CA 90806. (213) 595-7006. FINAL.

CIRCLE 118 ON READER SERVICE CARD

QUIKCARDS FOR FLASH

This second release of **Quikcards** quick-reference cards supports the FLASH communications program from The Catalog. The cards slip between the function keys and the computer case.

$7.99. Hired Hand Graphics, 1010 N.E. Dewey Dr., Grant's Pass, OR 97526. (503) 476-6931. PRESS.

CIRCLE 119 ON READER SERVICE CARD

INAGEM AGENDA+

This electronic GEM desktop organizer keeps multiple records of your past, present or future events with a calendar, phonebook, diary and special reminder alarm. Memos can be printed by the week, month or year, and entries can be deleted at any time. **Inagem Agenda+** features full GEM user interface, high-speed search and retrieval of memos by labels, overlapping windows to maximize onscreen information, 3200 characters per day and traveling format memo and phonebook printouts.

$49.95. Inagem Technologies Inc., 6117 Gerard Morisset Avenue, Montreal, Quebec H1M 3J8. Canada. (514) 256-9942. PRESS.

CIRCLE 120 ON READER SERVICE CARD

ACTIVISION GAMES

Zone out in the wacky world of **Tass Times in Tonetown** ($49.95), where being Tass is all that matters—just like being hip in the '60s. This insane adventure game looks at things (and says things) in a new way. You'll meet strange creatures and stranger people. And you'll probably be the strangest of all when you're done.

Shanghai ($44.95), a strategy game using the 144 tiles from Mah Jongg, challenges you to remove matching tiles from a pyramid viewed from the top. Once picked, new tiles are displayed. It sounds elementary, but it's fiendishly addictive. Solitaire, tournament and timed options are available.

With **Gamestar Championship Baseball** ($44.95), you're the manager, batter, pitcher and fielders. An innovative split-screen approach gives you both a total field view and a ground-level batter's perspective.

GBA Championship Basketball: Two-on-Two ($44.95) lets you pass, shoot, dribble or slam dunk the ball. You can go to the playoffs.

Activision Inc., P.O. Box 7826, Mountain View, CA 94039. (415) 960-0410. PRESS.

CIRCLE 121 ON READER SERVICE CARD

TRANSFORM

This advanced modular music system provides all the features used in today's music production, giving you polyphonic high-resolution notes. **TRANSfORM** ($99.95) modules use full GEM implementation, and all modules have instant access to other TRANSfORM modules.

Xtrack ($149.95), an easy-to-use sequencer and recorder for real-time and step input, has unlimited tracks to record on, name and edit. Features include a MIDI event editor and full MIDI implementation.

Compose and arrange music with **Xnotes** ($199.95), a composer/score publisher with high-resolution printouts of your musical scores and page preview for sheet-music layout (including text).

Xsyn ($99.95) features the Sound Editor, which uses click or slide hardware faders and an editor panel simulated by professional graphics on one page, clearly displayed. A Sound Manager controls as many synthesizers as are installed in the GEM desktop. The Real-Time Recorder operates every MIDI keyboard and records and stores 50,000 polyphonic notes. The built-in RAMdisk loses no data after a system reset.

Beam Team, 6100 Adeline Street, Oakland, CA 94608. (415) 658-3208. PRESS.

CIRCLE 125 ON READER SERVICE CARD

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SOFTWARE LIBRARY

Antic type-in listing section includes every full-length program from this issue. Listings are easier to type and proofread, easy to remove and save in a binder if you wish.

ST RESOURCE

DISK SUBSCRIBERS: Programs for 8-bit Atari computers can be used immediately. Just follow instructions in the accompanying magazine articles. ST Owners: See monthly disk's ST Help File for instructions on how to transfer programs to 3-1/2 inch disk.

Antic program listings are typeset on the Star's SB-10 printer—from Star Micronics, Inc., 200 Park Avenue, New York, NY 10166.

TYPING SPECIAL ATARI CHARACTERS

Antic printed program listings leave a small space between each Atari Special Character for easier reading. Immediately below you will see the way **Antic** prints all the standard Atari letters and numbers, in upper and lower case, in normal and inverse video.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789 0123456789

The Atari Special Characters and the keys you must type in order to get them are shown in the two boxes below.

NORMAL VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	CTRL ,		CTRL S
	CTRL A		CTRL T
	CTRL B		CTRL U
	CTRL C		CTRL V
	CTRL D		CTRL W
	CTRL E		CTRL X
	CTRL F		CTRL Y
	CTRL G		CTRL Z
	CTRL H		ESC ESC
	CTRL I		ESC CTRL −
	CTRL J		ESC CTRL =
	CTRL K		ESC CTRL
	CTRL L		ESC CTRL *
	CTRL M		CTRL .
	CTRL N		CTRL ;
	CTRL O		CTRL =
	CTRL P		ESC SHIFT CLEAR
	CTRL Q		ESC DELETE
	CTRL R		ESC TAB

INVERSE VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	人 CTRL ,		CTRL X
	人 CTRL A		CTRL Y
	人 CTRL B		CTRL Z
	人 CTRL C		ESC SHIFT CLEAR
	人 CTRL D		ESC SHIFT INSERT
	人 CTRL E		ESC CTRL TAB
	人 CTRL F		ESC SHIFT TAB
	人 CTRL G		人 CTRL .
	人 CTRL H		人 CTRL ;
	人 CTRL I		人 SHIFT
	人 CTRL J		ESC CTRL 2
	人 CTRL K		ESC CTRL DELETE
	人 CTRL L		ESC CTRL INSERT
	人 CTRL M		
	人 CTRL N		
	人 CTRL O		
	人 CTRL P		
	人 CTRL Q		
	人 CTRL R		
	人 CTRL S		
	人 CTRL T		
	人 CTRL U		
	人 CTRL V		
	人 CTRL W		

Whenever the CONTROL key (CTRL on the 400/800) or SHIFT key is used, *hold it down* while you press the next key. Whenever the ESC key is pressed, *release* it before you type the next key.

Turn on inverse video by pressing the Reverse Video Mode Key . Turn it off by pressing it a second time. (On the 400/800, use the Atari Logo Key 人 instead.)

Among the most common program typing mistakes are switching certain capital letters with their lower-case counterparts—you need to look especially carefully at P, X, O and 0 (zero).

Some of Atari Special Characters are not easy to tell apart from standard alpha-numeric characters. Usually the Special Characters will be boxed. Compare the two sets of characters below:

SPECIAL		STANDARD	
	CTRL F	/	/
	CTRL G	\	SHIFT +
	CTRL N	—	SHIFT −
	CTRL R	-	−
	CTRL S	+	+

HOW TO USE TYPO II (8-BIT)

TYPO II automatically proofreads **Antic**'s type-in BASIC listings for 8-bit Atari computers. It finds the exact line where you made a program typing mistake.

Type in TYPO II and SAVE a copy to disk or cassette. Now type GOTO 32000. When you see the instruction on the screen, type in a single program line **without the two-letter TYPO II code** at the left of the line number. Press the [RETURN] key.

Your line will reappear at the bottom of the screen with a two-letter TYPO II code on the left. If this code is not exactly the same as the line code printed in the magazine, you mistyped something in that line.

To call back any line previously typed, type an asterisk [*] followed (without in-between spaces) by the line number, then press [RETURN]. When the complete line appears at the top of the screen, press [RETURN] again. This is also the way you use TYPO II to proofread itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000.

To remove TYPO II from your program, type LIST "D:FILENAME",0,31999 [RETURN] (Cassette owners LIST "C:). Type NEW, then ENTER "D:FILENAME"[RETURN](Cassette—ENTER "C:). Your program is now in memory without TYPO II and you can SAVE or LIST it to disk or cassette.

Don't type the TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "K":POSITION 11,1:? "TYPO II "
EM 32050 TRAP 32040:POSITION 2,3:? "Type
   in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "K":POSITION 11,1:? " TYPO II 
   ":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED":G
   OTO 32050
VV 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
   ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
   (LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
   t match press  RETURN  and edit line a
   bove.":GOTO 32050
```

ST NEW PRODUCTS
continued from page 84

Shelbourne Software Systems' **ST-Pool** ($34.95) lets you select nine different types of racks—even create one and add it to the list. The game also includes three optional random balls and nine different table colors.

Shelbourne Software Systems Inc., 7221 Rising Sun Avenue, Suite #191, Philadelphia, PA 19111. (215) 725-5644. FINAL.

CIRCLE **240** ON READER SERVICE CARD

MEMORY EXPANSION

The **ThoughtSpace TS-1A** ($150) gives you a full megabyte of memory on a 520ST, enabling it to run at its best more often—it won't be starved for workspace by large documents and applications. You now can use more desk accessories simultaneously, set up large RAM disks and run 1040ST software. For 1040ST owners ThoughtSpace has a two-megabyte memory expansion (about $450) that uses inexpensive 256K RAM chips instead of 1Mb chips, plus "secret extras."

ThoughtSpace Development, 2450 Waring Street, No. 21, Berkeley, CA 94704. (415) 845-1415. FINAL, PRESS.

CIRCLE **122** ON READER SERVICE CARD

PUBLISHING PARTNER

With this comprehensive page layout program, you can see text, rules (lines) and columns in their actual sizes and positions on the screen as you type and edit the page. Design, compose and paste up publishing items ranging from newsletters, forms, tables, ads, charts and more. What you see is what you get.

$149.95. SoftLogic Corp., 4129 Old Baumgartner, St. Louis, MO 63129. (314) 894-8608. (Marketed by Shanner International.) BETA.

CIRCLE **124** ON READER SERVICE CARD

TRIMBASE

This easy-to-use, GEM-based, full relational database system can be used without programming and allows for a file to be larger than the capacity of RAM. Among its features are online help, macros, data type-checking, handling of unknown or "special" values and a report generator.

Approximately $134 in Scottish pounds. Talent Computer Systems, Curran Building, 101 St. James Road, Glasgow G4 0NS, Scotland. 041-552 2128. FINAL.

CIRCLE **127** ON READER SERVICE CARD

Haba MailRoom ($74.95), a mailing list manager with search and display capabilities, will merge addresses directly with the HabaWriter word processor to create professional form letters. The mouse-controlled **HabaMerge** ($39.95) mail merge utility prints personalized form letters with documents created by HabaWriter, or combines them with Habadex Phone Book files. The **HabaView** database ($74.95) uses GEM. **HabaCheck** ($74.95) lets you arrange your checkbook four ways.

Haba/Arrays, 6711 Valjean Ave, Van Nuys, CA 91406. (800) 468-4222. PRESS.

FOUR FROM TOMMY

From TommySoftware in West Germany, **LisPas II ST** (about $580 in Deutschmarks) allows easy entrance to artificial intelligence — enter commands and LisPas II responds immediately. LisPas II helps solve the problems of the "LISP jungle" and prvides an easy, learnable user interface featuring all GEM capabilities. The program lets you program your own windows, menus, etc.

Copy-protect your applications via linkable module and master program with **Lock_It**, (about $490) a fully GEM-based copy protection utility which uses a different protection scheme for each program. **Crypt_It** (about $190) allows 10 different levels of encoding or decoding by using individual passwords.

Musix 32 (about $175), a full-featured professional music construction set, lets you write your own music as a standalone or as background sound for your own programs. Cut, Copy, Paste, Merge and printer output are provided.

TommySoftware, Mainzer Landstrasse 147, D-6000 Frankfurt/M.1, West Germany. 069/736917. PRESS.

CIRCLE **261** ON READER SERVICE CARD

PAYDAY

The first of a series of accounting programs, **PayDay** can handle an annual payroll of $21 million and 255 employees. It's completely menu-driven, and context-sensitive help is available via the [HELP] key. Runs on any 520ST or 1040ST with at least one drive, and a hard disk is supported.

$69.95. Crystal Software, P.O. Box 803, Merlin, OR 97532. (503) 479-9516. PRESS.

CIRCLE **116** ON READER SERVICE CARD

The Data Dumpstor ST ($89.95) is a general purpose MIDI system-exclusive data storage program. Store patches, sequences, drum patterns, waveforms, samples and other MIDI information to disk quickly and easily. The Dumpstor accepts MIDI dumps from more than 30 different instruments and keyboards, and features a 310K data storage buffer on the 520ST, or 835K on the 1040ST. Twenty data files can be in memory at the same time, and the GEM is supported. Now you can stop saving drum data from Roland TR707/727 on slow, unreliable cassettes. Use the **TR707 Dumpstor ST** ($64.95) instead, and hold 20 dumps at once.

CIRCLE **268** ON READER SERVICE CARD

THREE FROM STONE AGE

UltraCalc ($24.95), a 40-function scientific calculator, runs as a standalone application or can be installed as a desk accessory. Available with either standard algebraic or Reverse Polish Notation interface, UltraCalc features a 32-bit integer mode and supports color and monochrome systems.

Lewis 123 ($29.95) is a chemistry spreadsheet for anyone needing to sketch covalent bonds. It allows 400 individual elements onscreen at once and uses standard DEGAS printer drivers. Monochrome only.

Encode sensitive data, picture or program files with **Encrypt** ($19.95). Choose from over 2 billion alphanumeric passwords. Encrypt works at 1K per second on floppy drives and even faster on hard disks and RAMdisks.

Stone Age Software Inc., P.O. Box 1216, Amherst, NH 03031. (603) 673-8734. PRESS.

CIRCLE **264** ON READER SERVICE CARD

New ST product notices are compiled from information provided by the products' manufacturers. ***Antic*** *assumes no responsibility for the accuracy of these notices or the performance of the product. Each mention is followed by a code word indicating that, at press time,* ***Antic*** *had seen a FINAL marketable version, near-final BETA, earlier ALPHA, incomplete DEMO, or PRESS release.*

pop-up window explains error messages

ELECTRIC CHARLIE!

Article on page 42

LISTING 1

Don't type the TYPO II Codes!

```
GH 10 REM ELECTRIC CHARLIE!
PB 20 REM BY PATRICK BASS
FW 30 REM (c) 1985, ANTIC PUBLISHING
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
MM 70 FN$="D:CHARLIE.EXE":REM THIS IS THE
    NAME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "      ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")     "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? " COMPLETED 
   "
NG 1000 DATA 1848
AM 1010 DATA 2552550000362510360761080360
   7217300921020122024000517300000424003З
   173000004073001141000004152
TN 1020 DATA 0721380721730000042400090321
   66038032179039076045036032054039104170
   104168173241255201002208004
RK 1030 DATA 1040760252522010012080041040
   76012252104076190255000000000000000000
   000000032032032032032032067
BV 1040 DATA 0720650820760730690330321051
   15032097099116105118101046000000000120
   169000141000004141075040169
OX 1050 DATA 0001600481412310021402320021
   73048002133218173049002133219160004024
   177218105084141072036200177
OJ 1060 DATA 2181050001410730361600040241
   77218105206141074036200177218105000141
   0750361600004024177218105038
FU 1070 DATA 1410760362001772181050011410
   77036160004024177218105078141078036200
   177218105001141079036160004
VQ 1080 DATA 0241772181050051411060362001
   77218105000141107036169080160036133218
   132219173106036133220173107
RV 1090 DATA 0361332210320570401690031600
   36252036217037141008002140009002169000
   133008088076000160000000000
PY 1100 DATA 0000000001451461511461461461
   46146146146146146146146146146151146
   133252160252160160160195200
TE 1110 DATA 1932102042011971611601601602
   52160252129146152146146146146146146
   146146146146146146146152146
ZT 1120 DATA 1322521901601601601601601601
   60160160160160160160160160160252129
   146146146146146146146146146
PT 1130 DATA 1461461461461461461461511461
   322521972422242239242160163186160160160
   160160160160160252032252252
JX 1140 DATA 1932441602042332382291861601
   60160160160160160160252032252129146151
   146146146146146146146146146
UO 1150 DATA 1461461461511461471461322521
   88252032032032032032032032032032032
   032252190252131252154146152
QS 1160 DATA 1461461461461461461461461461
   46146146152146152146131000000164038159
   039000000032009039162009160
NT 1170 DATA 0001850520181530520181850520
   18032133039153052018200192020144236024
   169040109174038141174038169
WO 1180 DATA 0001091750381411750380241690
   20109177038141177038169000109178038141
   178038024169020109180038141
UW 1190 DATA 1800381690001091810381411810
   38024169040109186038141186038169000109
   187038141187038202016163096
RD 1200 DATA 1730720361411740381730730361
   41175038169218160037141177038140178038
   169016160037141180038140181
RT 1210 DATA 0381730720361411860381730730
   36141187038096032110039162009160000185
   052018153052018200192020144
CQ 1220 DATA 2450241690201090620391410620
   39169000109063039141063039024169040109
   065039141065039169000109066
JR 1230 DATA 0391410660392020162060961692
   18160037141062039140063039173072036141
   065039173073036141066039096
FT 1240 DATA 0720411281411610391040411272
   01032176004105064144007201096176003056
   233032013161039160039155040
MQ 1250 DATA 0960001602552001772430162510
   41127145243200169000145243096169128141
   075040169000160000133212132
RV 1260 DATA 2131652121332421651951332120
   32170217032230216032162039169128160005
   133218132219173076036133220
CH 1270 DATA 1730770361332210320570401651
   86133212165187133213169000133242032170
   217032230216032162039169128
WL 1280 DATA 1600051332181322191730780361
   33220173079036133221032057040165195162
   051221076040240005202016248
ZN 1290 DATA 1620431380101701891280401332
   18189129040133219173074036133220173075
   036133221032057040096160000
MZ 1300 DATA 1772182400110321330390130750
   401452202002082410960000002003004005006
   007008009010011012013014015
EA 1310 DATA 0160170180190200211281291301
   31132133134135136137138139140141142143
   144145146147160161162163164
AF 1320 DATA 1651661671681691701712320402
   46040002041021041037041049041066041080
   041096041115041130041145041
AT 1330 DATA 1620411760411560401510411910
   41208041224041236041252041010042026042
   038042054042069042081042098
KB 1340 DATA 0421150421310421420421540421
   71042186042202042216042229042243042002
   043013043027043043043058043
UX 1350 DATA 0710430860430960431100431240
   43138043150043162043174043189043204043
   079085084032079070032077069
XQ 1360 DATA 0770790820890000860650760850
   69032069082082079082000084079079032077
   065078089032086065082073065
QD 1370 DATA 0660760690830000830840820730
   78071032084079079032076079078071000069
   078068032079070032068065084
MU 1380 DATA 0650000780850770660690820320
   84079079032076065082071069000084089080
   069032077073083077065084067
```

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```
MC 1390 DATA 072000065082082065089032068073077069078083073079078000065082071032083084065067075032079086069
QS 1400 DATA 082070076079087000068073086073068069032066089032090069082079000076073078069032078079084032070
JK 1410 DATA 079085078068000078069088084032087073084072079085084032070079082000076073078069032
OY 1420 DATA 084079079032076079078071000084065082071069084032068069076069084069068000082069084085082078032
XX 1430 DATA 084079032087072069082069032070079082000071065082066065071069032067079076076069067084079082032
JO 1440 DATA 085077069082073067000080082079071082065077032084079079032066073071000066065068032067072065078
RY 1450 DATA 078069076032035000078079084032079080069078000083084065067075032070085076076000066082069065075
PK 1460 DATA 082084000067072065078078069076032073083032079080069078000085078075078079087078032068069086073
DZ 1470 DATA 067069000079085084080085084032079078076089000073078080085084032079078076089000084065078082079
ER 1480 DATA 000067072065078078069076032078079084032079080069078000085078075078079087078032067072065078078
VT 1490 DATA 069076000073078080085084032079070032069078068032079070032070073076069000082065068073085083
JW 1500 DATA 069067079082068032084079079032084065082071069084032067079076079082032067065082068000
AD 1510 DATA 067079077077065078068032078079084032073077080076069077069078084069068000073078080085084032
MZ 1520 DATA 085084032079070032082065078071069000084069082073078065076032083084082073078071032067079076
OU 1530 DATA 032067072069067075083085077032069082082079082000067079082082069067084032083079070084
JW 1540 DATA 082079082000078079078069084032067079077077065078068032070065073076069068000076079067075069
CT 1550 DATA 082065077000068082073086069032078079084032082069065068089000076079079075032079070032
MS 1560 DATA 000068073083075032066065068032067079077077065078068000082069071069082069078073084069032
UE 1570 DATA 073083083077065084067072000067079069069067032068069077065078068032070065073076069068000
HM 1580 DATA 043069082082079082032084079079032077065078089032069078068032070073076069083000085078075
XQ 1590 DATA 068073082069067084079082089032070085076076000070073076069032076079067075069068032079078
FN 1600 DATA 079073082069067084079082089032070073076069000224002225002000036
```

LISTING 2

```
0100 ;D1:CHARLIE.M65
0110 ;
0120        .TITLE "Charlie 103186"
0130 ; (c)1987 Antic Publishing
0140 ; Written by Patrick Bass
0150        .IF PASS=0
0160           .INCLUDE #D1:SYSEQU.M65
0170           .INCLUDE #D1:IOMAC.LIB
0180           .ENDIF
0190 PASS =  1
0200 TOTALCODE = ENDCODE-STARTCODE
0210        .OPT NO LIST
0220        .OPT NO MLIST
0230        .PAGE
0240        .INCLUDE #D1:CHAA.M65
0250        .OPT LIST
0260 ENDCODE
0270        *=  $02E0
0280        .WORD STARTCODE
0290        .OPT NO LIST
0300        .END
```

LISTING 3

```
0100 ;D1:CHAA.M65
0110 ;(c)1987 Antic Publishing
0120 ;Written by Patrick Bass
0130 ;Included from D:CHARLIE.M65
0140 ;
0150 ;Load address into pointer.
0160 ;Example:   LEA.W  LABEL,POINTER
0170 ;
0180      .MACRO LEA.W
0190      LDA # <%1
0200      LDY # >%1
0210      STA %2
0220      STY %2+1
0230      .ENDM
0240 ;
0250 ;Move a single byte in memory.
0260 ;Example:   MOVE.B  SOURCE,DEST
0270 ;
0280      .MACRO MOVE.B
0290      LDA %1
0300      STA %2
0310      .ENDM
0320 ;
0330 ;Move a single word in memory.
0340 ;Example:   MOVE.W  SOURCE,DEST
0350 ;
0360      .MACRO MOVE.W
0370       MOVE.B  %1,%2
0380       MOVE.B  %1+1,%2+1
0390      .ENDM
0400 ;
0410 ;Add a WORD value to a pointer
0420 ;Example: ADD.W    5,AMOUNT
0430 ;
0440      .MACRO ADD.W
0450      CLC
0460      LDA # <%1
0470      ADC %2
0480      STA %2
0490      LDA # >%1
0500      ADC %2+1
0510      STA %2+1
0520      .ENDM
0530 ;
0540 ;Fix proper master pointers.
0550 ;Ex: FIX     BASE,OFFSET,POINTER
0560 ;
0570      .MACRO FIX
0580      LDY #4
0590      CLC
0600      LDA (%1),Y
0610      ADC # <%2
0620      STA %3
0630      INY
0640      LDA (%1),Y
0650      ADC # >%2
0660      STA %3+1
0670      .ENDM
0680 ;
0690 ;-----------------------------
0700 ; Constants
0710 ;
0720 CTRL.SHIFT.ESCAPE = $80+$40+$1C
0730 POINTER.A = $DA ;Over here!
0740 POINTER.B = $DC ;Over there!
0750 P.A =    POINTER.A
0760 P.B =    POINTER.B
0770 ;
0780 STARTCODE = $2400 ;Gonzo
0790 SDLSTL = $0230  ;Dlist Shadow
0800 VKEYBD = $0208  ;Vec: Keyboard
0810 MEMLO = $02E7   ;Down in Dixie
0820 WARMST = $08    ;Sugar Bear
0830 BASIC.WARM.START = $A000
0840 KBCODE = $D209  ;Whatz pressed?
0850 OPTION.BYTE = $FFF1 ;Whos there?
0860 XL.XE.SERIES = 2 ;Type of type
0870 STOPLN = $BA    ;Where stopped.
0880 ERRSAVE = 195   ;Last err known
0890 LBUFF = $0580   ;BASIC buildnum
0900 INBUFF = $F3    ;Here too
0910 CIX =    $F2    ;Character index
0920 FR0 =    $D4    ;Float zero
0930 IFP =    $D9AA  ;Integer->Float
0940 FASC =   $D8E6  ;Float->ATASCII
0950 ;
```

```
0960 WINDOW.FLAG = $0400 ;Window on?
0970 ;
0980 ; Offsets for printable lines.
0990 WINDOW.OFFSET = [40*2]+4
1000 REPORT.OFFSET = [40*5]+6
1010 ERROR.OFFSET = [40*7]+14
1020 LINE.OFFSET = [40*8]+14
1030 ;...and contractions.
1040 W.O =    WINDOW.OFFSET
1050 R.O =    REPORT.OFFSET
1060 E.O =    ERROR.OFFSET
1070 L.O =    LINE.OFFSET
1080 ;
1090 ;--------------------------
1100 ;So the program code starts
1110 ; right here, and jumps.
1120      *=  STARTCODE
1130      JMP SETUP
1140 ;
1150 ;- - - - - - - - - - - - - -
1160 ACCESSORY
1170 ;Save current acc.
1180 ;Was key press CTRL-ALT-ESC?
1190 ;Branch over if it was...
1200      PHA
1210      LDA KBCODE
1220      CMP #CTRL.SHIFT.ESCAPE
1230      BEQ SETSTART
1240 ;
1250 ;Else not right char, is
1260 ; window currently up?
1270 ;Branch out if not... else erase
1280      LDA WINDOW.FLAG
1290      BEQ SETX
1300 ;
1310 SETSTART
1320 ;Toggle window-on flag.
1330      LDA WINDOW.FLAG
1340      EOR #1
1350      STA WINDOW.FLAG
1360 ;
1370 ;Stack rest of registers.
1380      TYA
1390      PHA
1400      TXA
1410      PHA
1420 ;
1430 ;Is window coming up?
1440 ;Branch if not...
1450      LDA WINDOW.FLAG
1460      BEQ SETOFF
1470 ;
1480 ;Else open, work the window.
1490      JSR OPEN.WINDOW
1500      JSR WORK.WINDOW
1510      JMP SETX1
1520 SETOFF
1530      JSR CLOSE.WINDOW
1540 SETX1
1550      PLA
1560      TAX
1570      PLA
1580      TAY
1590 SETX
1600 ;Folks, I know all about
1610 ;indirect jumps.  MAC65 would
1620 ; not let me grab the old
1630 ;VKEYBD vector. Don't know why.
1640 ;
1650      LDA OPTION.BYTE
1660      CMP #XL.XE.SERIES
1670      BNE MAYBE.THE.1200XL
1680 ;
1690      PLA
1700      JMP $FC19
1710 ;
1720 MAYBE.THE.1200XL
1730      CMP #1
1740      BNE ITS.AN.800
1750 ;
1760      PLA
1770      JMP $FC0C
1780 ;
1790 ITS.AN.800
1800      PLA
1810      JMP $FFBE
1820 ;
1830 ;----------------
1840 W.SCREEN
1850      .WORD 0       ;Window
1860 R.SCREEN
1870      .WORD 0       ;Report Line
1880 E.SCREEN
1890      .WORD 0       ;Error Line
1900 L.SCREEN
1910      .WORD 0       ;Line Line
1920 C.MESS
1930      .BYTE "       CHARLIE!"
1940      .BYTE " is active.",0
1950 C.SCREEN
1960      .WORD 0       ;CHAS Line
1970 ;
1980 ;- - - - - - - - - - - - - -
1990 SETUP
2000 ;Don't listen to anybody.
2010 ;Make sure window is down...
2020 ;...and we print normal text.
2030 ; Point MEMLO at $3000.
2040 ;Build new pointers into window
2050 ;Tell 'em CHARLIEs active.
2060 ;Replace Keyboard Vector
2070 ;Start listening again...
2080 ;...and initialize BASIC.
2090 ;
2100      SEI
2110      LDA #0
2120      STA WINDOW.FLAG
2130      STA REVERSE.FLAG
2140       LEA.W  $3000,MEMLO
2150 ;
2160       MOVE.W  SDLSTL,POINTER.A
2170       FIX  P.A,W.O,W.SCREEN
2180       FIX  P.A,R.O,R.SCREEN
2190       FIX  P.A,E.O,E.SCREEN
2200       FIX  P.A,L.O,L.SCREEN
2210       FIX  P.A,5,C.SCREEN
2220 ;
2230       LEA.W  C.MESS,POINTER.A
2240       MOVE.W  C.SCREEN,POINTER.B
2250      JSR WIND.LINE.OUT
2260 ;
2270       LEA.W  ACCESSORY,VKEYBD
2280      LDA #0
2290      STA WARMST
2300      CLI
2310      JMP BASIC.WARM.START
2320 ;
2330 ;- - - - - - - - - - - - - -
2340      .WORD 0,0,0
2350 WINDOW
2360      .BYTE "┌─┬──────────────────┬─┐"
2370 WIND.W = *-WINDOW
2380      .BYTE "│ │███CHARLIE!███│ │"
2390      .BYTE "├─┴──────────────────┴─┤"
2400      .BYTE "│>████████████████████│"
2410      .BYTE "├────────────────────┬─┤"
2420      .BYTE "│Error #:██████████│ │"
2430      .BYTE "│At Line:██████████│ │"
2440      .BYTE "├─┬─────────────────┼─┤"
2450      .BYTE "│<│              │>│┘│"
2460      .BYTE "└─┴─────────────────┴─┘"
2470 WIND.H = [*-WINDOW-1]/WIND.W
2480      .WORD 0
2490 W.BUFF
2500      *=  *+[*-WINDOW]
2510      .WORD 0
2520 ;
2530 ;--------------------------
2540 OPEN.WINDOW
2550      JSR INIT.OPEN ;Set pointers
2560 ;
2570      LDX #WIND.H
2580 OW1
2590      LDY #0
2600 O1FROM
2610      LDA $1234,Y ;Copy the screen
2620      STA $1234,Y ;to buffer.
2630 ;
2640      LDA $1234,Y ;Copy the window
2650      JSR ADJUST  ;in screen code
2660      STA $1234,Y ;to the screen.
2670 ;
2680      INY
2690      CPY #WIND.W
2700      BCC O1FROM
2710 ;
2720       ADD.W  40,O1FROM+1
2730       ADD.W  WIND.W,O1FROM+4
2740       ADD.W  WIND.W,O1FROM+7
2750       ADD.W  40,O1FROM+13
2760      DEX
2770      BPL OW1
2780 ;
2790      RTS
2800 ;
2810 ;- - - - - - - - - - - - - -
2820 INIT.OPEN
```

continued on next page

```
2830        MOVE.W  W.SCREEN,01FROM+1
2840        LEA.W  W.BUFF,01FROM+4
2850 ;
2860        LEA.W  WINDOW,01FROM+7
2870        MOVE.W  W.SCREEN,01FROM+13
2880 ;
2890        RTS
2900 ;
2910 ;---------------------------
2920 CLOSE.WINDOW
2930        JSR INIT.CLOSE
2940 ;
2950        LDX #WIND.H
2960 CW1
2970        LDY #0
2980 CFROM
2990        LDA $1234,Y  ;Copy buffer
3000        STA $1234,Y  ;back to screen
3010 ;
3020        INY
3030        CPY #WIND.W
3040        BCC CFROM
3050 ;
3060        ADD.W  WIND.W,CFROM+1
3070        ADD.W  40,CFROM+4
3080        DEX
3090        BPL CW1
3100 ;
3110        RTS
3120 ;
3130 ;- - - - - - - - - - - - - -
3140 INIT.CLOSE
3150        LEA.W  W.BUFF,CFROM+1
3160        MOVE.W  W.SCREEN,CFROM+4
3170        RTS
3180 ;
3190 ;---------------------------
3200 ADJUST
3210        PHA
3220        AND #$80
3230        STA ADJUST.BIT
3240        PLA
3250        AND #$7F
3260 ;
3270        CMP #32        ;less than 32?
3280        BCS AJ1        ;Branch if not.
3290 ;
3300        ADC #64        ;Else add 64
3310        BCC AJX        ;and split.
3320 AJ1
3330        CMP #96        ;Is char >=96?
3340        BCS AJX        ;branch if yes
3350 ;
3360        SEC            ;Else 31>chr<96
3370        SBC #32
3380 AJX
3390        ORA ADJUST.BIT
3400        RTS
3410 ;
3420 ADJUST.BIT
3430        .BYTE 0
3440 ;
3450 ;-----------------------
3460 FIX.LBUFF
3470        LDY #$FF
3480 FX1
3490        INY
3500        LDA (INBUFF),Y
3510        BPL FX1
3520 ;
3530        AND #$7F
3540        STA (INBUFF),Y
3550        INY
3560        LDA #0
3570        STA (INBUFF),Y
3580        RTS
3590 ;
3600 ;-----------------------
3610 WORK.WINDOW
3620 ;Set to print in reverse...
3630 ;...and make FR0/CIX zero.
3640        LDA #$80
3650        STA REVERSE.FLAG
3660        LEA.W  0,FR0
3670        MOVE.B  FR0,CIX
3680 ;
3690 ;We print the value in ERRSAVE
3700        MOVE.B  ERRSAVE,FR0
3710 ;
3720 ;Integer to float...
3730 ;...Float to ATASCII.
3740 ;Place zero on end, print it.
3750        JSR IFP
3760        JSR FASC
3770        JSR FIX.LBUFF
3780        LEA.W  LBUFF,POINTER.A
3790        MOVE.W  E.SCREEN,POINTER.B
3800        JSR WIND.LINE.OUT
3810 ;
3820 ;Ditto with the value in STOPLN
3830        MOVE.W  STOPLN,FR0
3840        LDA #0
3850        STA CIX
3860        JSR IFP
3870        JSR FASC
3880        JSR FIX.LBUFF
3890        LEA.W  LBUFF,POINTER.A
3900        MOVE.W  L.SCREEN,POINTER.B
3910        JSR WIND.LINE.OUT
3920 ;
3930 ;- - - - - - - - - - - - - - -
3940 ;Now, to pick up proper error
3950 ;text string, first get error
3960 ;number, and compare it against
3970 ;each entry in a table of known
3980 ;error codes.
3990 ;
4000        LDA ERRSAVE
4010        LDX #NUM.ERR.ENTRIES-1
4020 WW1
4030        CMP ERROR.TABLE,X ;match?
4040        BEQ WW2       ;branch on match
4050 ;
4060        DEX            ;else next
4070        BPL WW1        ;until finis.
4080        LDX #43        ;NO MATCH
4090 WW2
4100 ;At this point, a match was
4110 ;found in the table, and the
4120 ;X register contains the number
4130 ;of the error entry.
4140        TXA
4150        ASL A          ;pointerize it.
4160        TAX
4170 ;
4180 ;Now pick up the address of the
4190 ;coresponding error string and
4200 ;place inside POINTER.A
4210 ;Then print the string out.
4220        LDA ERROR.JUMP,X
4230        STA POINTER.A
4240        LDA ERROR.JUMP+1,X
4250        STA POINTER.A+1
4260        MOVE.W  R.SCREEN,POINTER.B
4270        JSR WIND.LINE.OUT
4280 WWX
4290        RTS
4300 ;
4310 ;-------------------------
4320 WIND.LINE.OUT
4330        LDY #0
4340 WL1
4350        LDA (POINTER.A),Y
4360        BEQ WLX
4370 ;
4380        JSR ADJUST
4390        ORA REVERSE.FLAG
4400        STA (POINTER.B),Y
4410        INY
4420        BNE WL1
4430 WLX
4440        RTS
4450 ;
4460 REVERSE.FLAG
4470        .BYTE 0
4480 ;
4490 ;-------------------------
4500 ;A Table of all known error
4510 ;code numbers. Searched top down
4520 ;
4530 ERROR.TABLE
4540        .BYTE 2,3,4,5,6
4550        .BYTE 7,8,9,10,11
4560        .BYTE 12,13,14,15,16
4570        .BYTE 17,18,19,20,21
4580 ;
4590        .BYTE 128,129,130,131,132
4600        .BYTE 133,134,135,136,137
4610        .BYTE 138,139,140,141,142
4620        .BYTE 143,144,145,146,147
4630 ;
4640        .BYTE 160,161,162,163,164
4650        .BYTE 165,166,167,168,169
4660        .BYTE 170,171
4670 NUM.ERR.ENTRIES = *-ERROR.TABLE
4680 ;
4690 ;A table of all known error
4700 ;message addresses, in the same
```

```
4710 ;order as the table above.
4720 ;
4730 ERROR.JUMP
4740        .WORD E2,E3,E4,E5
4750        .WORD E6,E7,E8,E9
4760        .WORD E10,E11,E12
4770        .WORD E13,E14,E15
4780        .WORD E16,E17,E18
4790        .WORD E19,E20,E21
4800 ;
4810        .WORD E128,E129,E130
4820        .WORD E131,E132,E133
4830        .WORD E134,E135,E136
4840        .WORD E137,E138,E139
4850        .WORD E140,E141,E142
4860        .WORD E143,E144,E145
4870        .WORD E146,E147
4880 ;
4890        .WORD E160,E161,E162
4900        .WORD E163,E164,E165
4910        .WORD E166,E167,E168
4920        .WORD E169,E170,E171
4930 ;
4940 ;-----------------------------
4950 ;The error messages themselves.
4960 ;
4970 E2   .BYTE "OUT OF MEMORY",0
4980 E3   .BYTE "VALUE ERROR",0
4990 E4   .BYTE "TOO MANY VARIABLES",0
5000 E5   .BYTE "STRING TOO LONG",0
5010 E6   .BYTE "END OF DATA",0
5020 E7   .BYTE "NUMBER TOO LARGE",0
5030 E8   .BYTE "TYPE MISMATCH",0
5040 E9   .BYTE "ARRAY DIMENSION",0
5050 E10  .BYTE "ARG STACK OVERFLOW",0
5060 E11  .BYTE "DIVIDE BY ZERO",0
5070 E12  .BYTE "LINE NOT FOUND",0
5080 E13  .BYTE "NEXT WITHOUT FOR",0
5090 E14  .BYTE "LINE TOO LONG",0
5100 E15  .BYTE "TARGET DELETED",0
5110 E16  .BYTE "RETURN TO WHERE?",0
5120 E17  .BYTE "GARBAGE IN CODE",0
5130 E18  .BYTE "NOT NUMERIC",0
5140 E19  .BYTE "PROGRAM TOO BIG",0
5150 E20  .BYTE "BAD CHANNEL #",0
5160 E21  .BYTE "NOT LOAD FORMAT",0
5170 ;
5180 E128  .BYTE "BREAK ABORT",0
5190 E129  .BYTE "CHANNEL IS OPEN",0
5200 E130  .BYTE "UNKNOWN DEVICE",0
5210 E131  .BYTE "OUTPUT ONLY",0
5220 E132  .BYTE "XIO SYNTAX ERROR",0
5230 E133  .BYTE "CHANNEL NOT OPEN",0
5240 E134  .BYTE "UNKNOWN CHANNEL",0
5250 E135  .BYTE "INPUT ONLY",0
5260 E136  .BYTE "END OF FILE",0
5270 E137  .BYTE "RECORD TRUNCATED",0
5280 E138  .BYTE "DEVICE TIMEOUT",0
5290 E139  .BYTE "COMMAND REFUSED",0
5300 E140  .BYTE "FRAMING ERROR",0
5310 E141  .BYTE "OUT OF RANGE",0
5320 E142  .BYTE "FRAME OVERRUN",0
5330 E143  .BYTE "FRAME CHECKSUM",0
5340 E144  .BYTE "DISK ERROR",0
5350 E145  .BYTE "COMPARE ERROR",0
5360 E146  .BYTE "NOT IMPLEMENTED",0
5370 E147  .BYTE "NOT ENOUGH RAM",0
5380 ;
5390 E160  .BYTE "DRIVE NUMBER",0
5400 E161  .BYTE "TOO MANY FILES",0
5410 E162  .BYTE "DISK FULL",0
5420 E163  .BYTE "UNKNOWN ERROR",0
5430 E164  .BYTE "FILE MISMATCH",0
5440 E165  .BYTE "BAD FILE NAME",0
5450 E166  .BYTE "POINT ERROR",0
5460 E167  .BYTE "FILE LOCKED",0
5470 E168  .BYTE "UNKNOWN XIO",0
5480 E169  .BYTE "DIRECTORY FULL",0
5490 E170  .BYTE "FILE NOT FOUND",0
5500 E171  .BYTE "POINT INVALID",0
```

flash 8 pictures lightning-fast

130XE SLIDE SHOW

Article on page 38

LISTING 1

Don't type the TYPO II Codes!

```
QF 10 REM 130 XE BANK SWITCHING DEMO
IV 20 REM BY BILL MARQUARDT
HA 30 REM (c) 1987, ANTIC PUBLISHING
ZC 100 GRAPHICS 18
VC 110 GOSUB 380
AN 120 POKE PORTB,193+MODE+BANK0
VW 130 POKE DL+4,0:POKE DL+5,64
FF 140 FILLER=33:GOSUB 340
BW 150 POKE PORTB,193+MODE+BANK1
FW 160 FILLER=34:GOSUB 340
DD 170 POKE PORTB,193+MODE+BANK2
GN 180 FILLER=35:GOSUB 340
EK 190 POKE PORTB,193+MODE+BANK3
GL 200 FILLER=36:GOSUB 340
AM 210 POKE PORTB,193+MODE+BANK0
HY 220 FOR D=1 TO 100:NEXT D
BT 230 POKE PORTB,193+MODE+BANK1
IC 240 FOR D=1 TO 100:NEXT D
DA 250 POKE PORTB,193+MODE+BANK2
IG 260 FOR D=1 TO 100:NEXT D
EH 270 POKE PORTB,193+MODE+BANK3
IK 280 FOR D=1 TO 100:NEXT D
MU 290 GOTO 210
GJ 300 POKE PORTB,NORML
EA 310 POKE DL+5,INT(SC/256)
KW 320 POKE DL+4,SC-(PEEK(DL+5)*256)
NY 330 END
GL 340 FOR I=0 TO 239
CV 350 POKE NUSCREEN+I,FILLER
GF 360 NEXT I
ZN 370 RETURN
ND 380 PORTB=54017
OE 390 NORML=PEEK(PORTB)
UC 400 DL=PEEK(560)+PEEK(561)*256
CS 410 SC=PEEK(DL+4)+256*PEEK(DL+5)
QB 420 NUSCREEN=16384
YO 430 MODE=0
VH 440 BANK0=0:BANK1=4:BANK2=8:BANK3=12
ZK 450 RETURN
```

LISTING 2

```
ZD 100 REM 130XE BANK SWITCHING DEMO
TT 110 REM BY BILL MARQUARDT
JT 120 REM (c) 1987, ANTIC PUBLISHING
SM 130 GRAPHICS 0
VO 140 DIM F1$(15),F2$(15)
XU 150 DIM F3$(15),F4$(15)
AA 160 DIM F5$(15),F6$(15)
CG 170 DIM F7$(15),F8$(15)
```

continued on next page

```
HD 180 F1$="D:F1":F2$="D:F2"
LV 190 F3$="D:F3":F4$="D:F4"
PU 200 F5$="D:F5":F6$="D:F6"
UM 210 F7$="D:F7":F8$="D:F8"
UY 220 DIM F$(15)
PN 230 GRAPHICS 15+16
MU 240 PORTB=54017
UK 250 DL=PEEK(560)+PEEK(561)*256
YS 260 MODE=0
EZ 270 BANK0=0:BANK1=4
US 280 BANK2=8:BANK3=12
BC 290 POKE PORTB,193+MODE+BANK0
HQ 300 POKE DL+4,16:POKE DL+5,64
JZ 310 FOR I=6 TO 196
UO 320 POKE DL+I,14:NEXT I
AN 330 POKE DL+107,78
JV 340 POKE DL+108,0
WY 350 POKE DL+109,80
BQ 360 F$=F1$:HI=64:GOSUB 740
FA 370 F$=F2$:HI=96:GOSUB 740
CE 380 POKE PORTB,193+MODE+BANK1
CX 390 F$=F4$:HI=64:GOSUB 740
EW 400 F$=F3$:HI=96:GOSUB 740
CU 410 POKE PORTB,193+MODE+BANK2
CT 420 F$=F5$:HI=64:GOSUB 740
GD 430 F$=F6$:HI=96:GOSUB 740
ED 440 POKE PORTB,193+MODE+BANK3
EA 450 F$=F8$:HI=64:GOSUB 740
GS 460 F$=F7$:HI=96:GOSUB 740
BA 470 POKE PORTB,193+MODE+BANK0
XW 480 NUSCR=16384:HI=64:GOSUB 630
AN 490 NUSCR=NUSCR+8192
XC 500 HI=96:GOSUB 630
BS 510 POKE PORTB,193+MODE+BANK1
UH 520 GOSUB 630
RE 530 NUSCR=16384
VU 540 HI=64:GOSUB 630
DD 550 POKE PORTB,193+MODE+BANK2
UP 560 GOSUB 630
AK 570 NUSCR=NUSCR+8192
XS 580 HI=96:GOSUB 630
EO 590 POKE PORTB,193+MODE+BANK3
UE 600 GOSUB 630
RB 610 NUSCR=16384
JH 620 HI=64:GOSUB 630:GOTO 470
GF 630 REM SET COLOR REGISTERS
QD 640 POKE 712,PEEK(NUSCR+7680+16)
TQ 650 POKE 708,PEEK(NUSCR+7681+16)
VG 660 POKE 709,PEEK(NUSCR+7682+16)
SR 670 POKE 710,PEEK(NUSCR+7683+16)
FU 680 POKE DL+5,HI
HW 690 POKE DL+109,HI+16
VU 700 TIME=100:P=PADDLE(0)
US 710 IF P<>228 THEN TIME=P*10
IP 720 FOR DELAY=1 TO TIME:NEXT DELAY
ZJ 730 RETURN
KE 740 IO=848:REM FILE LOADER
VQ 750 OPEN #1,4,0,F$
EQ 760 POKE IO+2,7
JM 770 POKE IO+4,16
JA 780 POKE IO+5,HI
GD 790 POKE IO+8,4
IY 800 POKE IO+9,30
TE 810 X=USR(ADR("hhh▣LV▣"),16)
LI 820 CLOSE #1
ZK 830 RETURN
```

game of the month

QUATRO

Article on page 10

LISTING 1

Don't type the TYPO II Codes!

```
MP 2 REM QUATRO
NC 4 REM BY JEREMY BIRN
GI 6 REM (c) 1987, ANTIC PUBLISHING
LV 10 GRAPHICS 7:POKE 708,0:POKE 709,0:PO
   KE 710,0:A1=9
PI 20 DIM D(3,1),B(9,7),P(1),H(6),P$(42)
NO 30 DL=PEEK(560)+PEEK(561)*256:POKE DL+
   85,71:POKE DL+88,12
MO 40 ? "        QUATRO":POKE 752,1:? "
         BY JEREMY BIRN"
EY 50 ? "              ANTIC MAGAZINE '87"
LB 60 GOSUB 30000:REM CALL UDLI
NF 65 POKE 708,14:POKE 709,0:POKE 710,190
FZ 70 POKE CA,26:POKE CB,26
VS 80 POKE SET+82,190:POKE SET+83,190
AM 90 RESTORE
JH 100 FOR T=1 TO 6:FOR Y=0 TO 5:X=T*16+Y
   *2+50:POKE SET+T*13+Y-5,X
OP 110 POKE SET+T*13-Y-6,X:NEXT Y:NEXT T
DB 120 FOR T=0 TO 3:READ X,Y:D(T,0)=X:D(T
   ,1)=Y:NEXT T:DATA 1,1,0,1,-1,1,-1,0
LB 130 P$="  RANDOM STICK 1 STICK 2COMPUT
   ERBLACKWHITE":P(0)=2:P(1)=4
QE 140 ? #6;CHR$(125):? CHR$(125);:POKE S
   ET+82,0:POKE SET+83,0:POKE DL+85,198
KO 150 POKE DL+88,134:POKE DL+89,144:POKE
    DL+90,130:POKE SET+83,190:POKE 77,0
YL 160 GOSUB 490:X=P(0)*8:? " BLACK: ";P$
   (X-7,X);"      WHITE: ";:X=P(1)*8
CV 170 ? P$(X-7,X):? "ADJUST WITH JOYSTIC
   K: TRIGGER TO START":? CHR$(29);
QR 180 POKE SET+81-A,0:POKE SET+A+80,164
YP 190 K=STICK(0):P=PEEK(53279):IF  NOT S
   TRIG(0) OR P=6 THEN 230
WM 200 IF K=13 OR K=14 OR P=5 THEN GOSUB
   490:A= NOT A:GOTO 180
FK 210 IF K<14 OR P=3 THEN K=P(A):K=K+1:K
   =K-4*(K=5):P(A)=K:GOTO 160
PG 220 GOTO 190
YG 230 POKE SET+A+80,0:? CHR$(29);CHR$(15
   6);:FOR Y=1 TO 6:H(Y)=8:NEXT Y:N=1
SH 240 POKE DL+90,140:POKE SET+83,0:POKE
   DL+89,135:POKE SET+82,178
IL 250 A=PEEK(53770)>127:FOR X=0 TO 9:FOR
    Y=0 TO 7:B(X,Y)=0:NEXT Y:NEXT X
NE 260 ? :? CHR$(28);:GOSUB 680:IF N=49 T
   HEN ? "  A TIE GAME!!!":GOTO 540
WM 270 POKE SET+80+A,164:? N;".  ";P$(33+5
   *A,37+5*A);" TURN.";
QP 280 B=P(A)-2:T=0:ON P(A) GOSUB 350,410
   ,410,560
WV 290 X=H(T):H(T)=X-1:COLOR 2-A:FOR D=X*
   20-16 TO X*20-1:PLOT D,T*13-10
TA 300 DRAWTO D,T*13-1:NEXT D:Y=T:B(X,Y)=
   A+1
KY 310 FOR D=0 TO 3:GOSUB 360:IF R<3 THEN
    NEXT D:GOTO 330
AY 320 FOR T=1 TO 5:? CHR$(30);:NEXT T:?
   "WINS!!!";:T=0:R=T:COLOR 3:GOTO 500
LH 330 POKE SET+80+A,0:A= NOT A:N=N+1:GOT
   O 260
JE 340 T=INT(6*RND(1))+1:IF H(T) THEN RET
   URN
UV 350 POKE 53279,4:GOTO 340
UA 360 T=1:R=0
VV 370 IF B(X+T*D(D,0),Y+T*D(D,1))=A+1 TH
   EN T=T+1:R=R+1:GOTO 370
WE 380 T=-1
EB 390 IF B(X+T*D(D,0),Y+T*D(D,1))=A+1 TH
   EN T=T-1:R=R+1:GOTO 390
ZA 400 RETURN
NY 410 T=T+1:IF  NOT H(T) THEN 410
TS 420 R=SET+T*13-6:BN=PEEK(R):X=4:D=1
```

```
GM 430 X=X+1:IF X=5 THEN POKE R,255*D:POK
   E R+1,255*D:X=0:D= NOT D
ZK 440 IF PEEK(53279)=5 THEN POP :POKE R,
   BN:POKE R+1,BN:GOTO 140
HQ 450 POKE 77,0:K=STICK(B):IF STRIG(B) A
   ND K=15 THEN 430
GJ 460 POKE R,BN:POKE R+1,BN:K=(K=14):K=K
   *2-1:IF  NOT STRIG(B) THEN RETURN
ZS 470 T=T-K:T=T+6*( NOT T):T=T-6*(T=7):I
   F  NOT H(T) THEN 470
NZ 480 GOTO 420
FB 490 FOR C=15 TO 0 STEP -1:SOUND 0,121,
   10,C:NEXT C:RETURN
EM 500 POKE 710,15* NOT A:FOR BN=-1 TO 1
   STEP 2:T=(BN=1)
DI 510 B=X+T*D(D,0):K=Y+T*D(D,1):IF B(B,K
   )<>A+1 THEN NEXT BN:GOTO 540
RH 520 T=T+BN:FOR N=B*20-13 TO B*20-4:PLO
   T N,K*13-8:DRAWTO N,K*13-3:NEXT N
HB 530 GOSUB 490:GOTO 510
RO 540 POKE 77,0:IF STRIG(0) AND PEEK(532
   79)=7 THEN POKE 710,PEEK(20):GOTO 540
NJ 550 POKE 710,190:GOTO 140
MC 560 B=0:BN=-10^11:P=B:IF N<3 THEN 350
AE 570 GOSUB 680:POKE 53279,P:C=0:P=P+1:I
   F P=7 THEN T=B:RETURN
PW 580 X=H(P):Y=P:IF  NOT X THEN 570
FE 590 FOR D=0 TO 3:GOSUB 360:C=C+R:IF R=
   2 THEN C=C+20
JP 600 IF R>2 THEN T=P:RETURN
DX 610 NEXT D:A= NOT A:FOR D=0 TO 3:GOSUB
    360:C=C+R:IF R=2 THEN C=C+10
DC 620 IF R>2 THEN C=C+SET
XH 630 NEXT D:A= NOT A:IF X=1 OR N<6 THEN
    660
BA 640 X=X-1:FOR D=0 TO 3:GOSUB 360:C=C-2
   00*(R>2):NEXT D:A= NOT A
PB 650 FOR D=0 TO 3:GOSUB 360:C=C-3000*(R
   >2):NEXT D:A= NOT A
YR 660 IF C>BN THEN BN=C:B=P
QM 670 GOTO 570
ZP 680 IF PEEK(53279)>5 THEN RETURN
VG 690 POP :POP :GOTO 140
OP 25000 REM THE UNIVERSAL DLI:
IO 30000 RESTORE 30040:FOR T=1536 TO 1568
   :READ D:POKE T,D:NEXT T
XR 30010 READ CA,CB:SET=T:D=PEEK(560)+PEE
   K(561)*256+2:POKE D,240:N=0:POKE 512,1
   :POKE 513,6
QR 30020 D=D+1:POKE SET+N,PEEK(712):T=PEE
   K(D):IF T=65 THEN POKE 1556,33+N:POKE
   54286,192:RETURN
QT 30030 T=T-128*(T>127):POKE D,T+128:POK
   E SET+N,PEEK(712):N=N+1:D=D+2*(T>64):G
   OTO 30020
LB 30040 DATA 33,72,138,72,174,0,6,189,0,
   6,141,10,212,141,24,208,141,26
KD 30050 DATA 208,224,152,208,2,162,32,23
   2,142,0,6,104,170,104,64,1550,1553
```

prizes for best screens

REBOUND CONSTRUCTION KIT

Article on page 44

LISTING 1

Don't type the TYPO II Codes!

```
JJ 1 REM REBOUND SCREENMAKER
DY 2 REM BY J.D. CASTEN
GF 3 REM (c) 1987, ANTIC PUBLISHING
JV 4 BRK=1:IF PEEK(53279)=5 THEN BRK=0
II 5 GOTO 1000
GN 100 FOR I=0 TO 1 STEP 0:FOR J=0 TO 5:P
   OKE 756,M+J*2:OX=X:OY=Y:S=PEEK(632):X=
   X+X(S):Y=Y+I(S):D=1
BD 110 IF X<0 OR X>19 THEN X=19-OX
TP 111 IF Y<0 OR Y>22 THEN Y=22-OY
HT 112 OT=T+2*(X<>OX OR Y<>OY)
CL 120 POKE 5,X:POKE 6,Y:LOCATE X,Y,Z:T=P
   EEK(644):IF  NOT T AND Z=32 AND OT THE
   N COLOR C:PLOT X,Y:GOTO 190
OS 125 IF  NOT T AND OT THEN COLOR 32:PLO
   T X,Y
PB 190 IF PEEK(764)<>255 THEN 200
YP 191 G=PEEK(53279):IF G=7 THEN NEXT J:N
   EXT I
SP 192 OP=P:P=P+(G=5)-(G=3):POKE 77,0:IF
   P<0 OR P>19 THEN P=19-OP
WA 193 IF G=6 THEN Q=1-Q:GOSUB 600+Q
HP 194 POKE 1678,48+P*8:LOCATE P,23,C:IF
   D THEN FOR D=1 TO 80:NEXT D:D=0
QU 195 GOTO 191
ZT 200 GET #1,K:G=K:IF K=125 THEN ? #6;"■
   ":X=0:Y=0:GOSUB 600+Q:NEXT J:NEXT I
MY 201 IF K>32 AND K<38 THEN 300
FO 202 IF K=19 OR K=12 THEN I=4+4*(K=19):
   GOTO 700
AO 203 IF K=5 THEN U=USR(58484)
RE 215 G=(K<>32 AND K>0 AND K<>126)
BC 220 POSITION X,Y:? #6;CHR$(K-G):X=X+1:
   GOTO 110
IB 300 GOSUB 350:RESTORE 9368+K:READ D,B$
   :? #6;B$:G=PEEK(D):GH=INT(G/16):GL=G-G
   H*16
YB 305 J=PEEK(632):G=GL:GL=GL-I(J):IF GL<
   0 OR GL>15 THEN GL=15-G
KB 306 G=GH:GH=GH+X(J):IF GH<0 OR GH>15 T
   HEN GH=15-G
SL 307 POKE D,GL+GH*16:IF PEEK(644) THEN
   305
BZ 308 GOSUB 360:GOTO 100
WZ 350 POSITION 1,23:? #6;"
   ":POKE 1683,245:POKE 1678,0:POKE 5
   ,22:POSITION 1,23:RETURN
XW 360 POKE 1683,244:POKE 1678,48+P*8:GOT
   O 600+Q
NO 400 GOSUB 600:POKE 559,62
VS 401 POKE 1592,120:POKE 1598,0:C=162:P=
   1:Q=0
LV 404 GOTO 100
UD 500 G=0:B$="D:":POKE 87,0:POSITION 27,
   11:POKE 764,255
HU 505 POKE 694,0:POKE 702,64:GET #1,K:IF
    K=126 AND G>1 THEN G=G-1:B$=B$(1,G):?
    "◀";:GOTO 505
BA 506 IF K=126 AND G THEN G=0:B$="D:":?
   "◀";:GOTO 505
MM 507 IF K=155 THEN POKE 87,1:RETURN
OZ 508 IF G=12 OR K=126 THEN 505
NA 510 IF K<46 OR K>90 THEN 505
HZ 515 G=G+1:B$(G+2,G+2)=CHR$(K):? CHR$(K
   );:GOTO 505
KA 600 POSITION 1,23:? #6;"■■■■↑↓■■■■$Z[
   \]^_":RETURN
EK 601 POSITION 1,23:? #6;",-□■■.□■■/■■■■
   #%■■":RETURN
LS 700 TRAP 900:GOSUB 350:? #6;" NAME:";:
   GOSUB 500:IF G=0 THEN GOSUB 360:GOTO 1
   00
EW 702 IF B$(3,4)="C:" THEN B$="C:"
RE 703 D$=B$:IF D$(1,1)<>"D" THEN D$="D:"
   :D$(3)=B$(3)
OD 710 IF I=8 THEN GOSUB 350:? #6;"SCRN#:
   ";:GOSUB 500:TRAP 710:V=VAL(B$(3)):IF
```

continued on next page

```
   V>141 OR V<1 THEN 710
FV 715 GOSUB 350:IF I=4 THEN ? #6;"LOADIN
   G SCREEN..."
NB 716 IF I=8 THEN ? #6;"SAVING SCREEN...
   "
EL 720 TRAP 900:CLOSE #2:OPEN #2,I,0,D$:I
   F I=8 THEN 750
TD 724 FOR J=0 TO 22
HH 725 INPUT #2;B$:I=1
OG 726 IF ASC(B$(I))<>34 THEN I=I+1:GOTO
   726-(I>15)
AG 730 POSITION 0,J:? #6;B$(I+1,I+20);
CN 735 NEXT J:INPUT #2;B$:TRAP 749:B$=B$(
   5)
AS 736 TRAP 749:IF ASC(B$(1))<48 OR ASC(B
   $(1))>57 THEN B$=B$(2):GOTO 736
NB 737 FOR I=1 TO 5:RESTORE 9400+I:READ D
   :GOSUB 770:POKE D,B:NEXT I:FOR I=1 TO
   4:GOSUB 770:NEXT I:X=B:GOSUB 770:Y=B
XN 749 CLOSE #2:GOSUB 360:GOTO 100
OW 750 I=V*50+1900:TX1=-1:TX2=0:TY1=0:TY2
   =0:NM=0:? #2;"^^ReboundvJ.D. Casten'sv
   Loading ";D$(3);" for:vv"
DQ 751 FOR J=0 TO 22:B$=STR$(I):B$(5)=" ?
    #6;/01234567890123456789/;":B$(11,11)
   =CHR$(34):B$(32,32)=CHR$(34)
GX 755 FOR K=0 TO 19:LOCATE K,J,D:POKE 5,
   K:POKE 6,J:IF D=131 THEN NM=NM+1
AR 756 IF TX1<0 AND D>26 AND D<31 THEN TX
   1=K:TY1=J
OG 757 IF D>26 AND D<31 THEN TX2=K:TY2=J
TX 759 B$(K+12,K+12)=CHR$(D):NEXT K:? #2;
   B$:I=I+1:NEXT J
FM 760 ? #2;I;"RET.:D.";PEEK(708);",";PEE
   K(1610);",";PEEK(710);",";PEEK(1614);"
   ,";PEEK(712);",";TX1+TX2;",";
IE 761 ? #2;TY1+TY2;",";NM;",";X;",";Y:CL
   OSE #2
CG 765 GOSUB 360:GOTO 100
DO 770 FOR J=1 TO LEN(B$):IF B$(J,J)=","
   THEN B=VAL(B$(1,J-1)):B$=B$(J+1):RETUR
   N
US 775 NEXT J:B=VAL(B$):RETURN
DM 800 IF BRK THEN POKE 16,64:POKE 53774,
   64
ZH 801 RETURN
FJ 900 GOSUB 350:? #6;"ERROR -";PEEK(195)
   ;:FOR J=15 TO 0 STEP -0.1:SOUND 0,25,6
   ,J:NEXT J:GOSUB 360:CLOSE #2:GOTO 100
JD 1000 POKE 106,PEEK(740):M=PEEK(106)-14
   :POKE 106,M-2:GRAPHICS 17:GOSUB 800:M2
   =M+10
PT 1001 ? #6:? #6;"ReBoUND sCrEeN MAkEr"
LQ 1002 ? #6;" IS InItIALiZINg. ."
FD 1004 OPEN #1,4,0,"K:"
SO 1005 P=PEEK(88)+256*PEEK(89):DIM B$(20
   0),D$(200)
LJ 1010 DIM M$(56),X(15),I(15):RESTORE 99
   00:FOR J=1 TO 56:READ D:M$(J)=CHR$(D):
   NEXT J
GX 1020 POKE M*256,0:U=USR(ADR(M$),M*256,
   M*256+1,3584):FOR J=0 TO 5:U=USR(ADR(M
   $),57872,M*256+J*512+8,504):NEXT J
NL 1099 RESTORE 9000
PP 1100 FOR K=0 TO 5:FOR J=8 TO 47:READ I
   :POKE M*256+K*512+J,I:NEXT J:NEXT K
AV 1105 FOR J=48 TO 127:READ I:FOR K=0 TO
    5:POKE M*256+J+K*512,I:NEXT K:NEXT J
DZ 1106 RESTORE 9800:FOR K=0 TO 9:READ I:
   FOR J=0 TO 5:U=USR(ADR(M$),57344+I*8,M
   *256+J*512+128+K*8,8):NEXT J:NEXT K
AF 1110 RESTORE 9200:FOR J=5 TO 15:READ I
   ,K:X(J)=I:I(J)=K:NEXT J
FU 1120 RESTORE 9300:FOR J=1536 TO 1689:R
   EAD I:POKE J,I:NEXT J:POKE 512,99:POKE
    513,6
TK 1122 RESTORE 9058:FOR J=0 TO 47:READ K
   :FOR I=0 TO 5:POKE M*256+I*512+J+464,K
   :NEXT I:NEXT J
PO 1123 U=USR(ADR(M$),M*256+120,(M+12)*25
   6+216,8)
UV 1125 RESTORE 9500:FOR J=1 TO 6:READ I,
   K:POKE 1536+I,M+K:NEXT J:U=USR(1536)
GI 1130 FOR J=0 TO 5:K=M*256+J*512+464:FO
   R I=0 TO 7
AP 1135 POKE K+I-256,PEEK((5-J)*512+M*256
   +8+I):POKE K+J*8+I,PEEK(M*256+(5-J)*51
   2+32+I):NEXT I:NEXT J
DW 1400 GRAPHICS 17:GOSUB 800:POKE 559,28
   :POKE 706,12:POKE 707,130:POKE 54279,M
   +6:POKE 53277,3:POKE 54286,64
WE 1401 DL=PEEK(560)+256*PEEK(561):POKE D
   L+3,198
OI 1410 FOR J=7 TO 27:POKE DL+J,134:NEXT
   J:POKE 54286,192
US 1420 POKE 708,52:POKE 710,166:POKE 709
   ,14
NC 1430 COLOR 32:S=15:POKE 623,1:SC=0:POK
   E 756,M:F=5:NG=0:POKE 757,224
EZ 1435 GOSUB 1950
QS 1499 GOTO 400
YP 1950 ? #6;"Hdantmc Rqd*shnm lIhs";
RL 1951 ? #6;"     aX ==== rorsdM     ";
BO 1952 RETURN
GM 9000 REM CHARACTER DATA
MX 9001 DATA 126,195,129,129,129,129,195,
   126
TM 9002 DATA 254,223,175,215,235,245,251,
   127
RX 9003 DATA 60,120,124,214,255,135,195,1
   26
VI 9004 DATA 126,255,219,255,231,195,231,
   126
KO 9005 DATA 6,15,11,153,153,208,240,96
HF 9006 DATA 126,195,129,153,153,129,195,
   126
ZF 9007 DATA 254,187,221,175,215,235,245,
   127
AR 9008 DATA 60,120,124,214,255,199,255,1
   26
RX 9009 DATA 126,239,255,251,209,241,251,
   126
BX 9010 DATA 14,31,17,24,24,136,248,112
SO 9011 DATA 126,195,153,189,189,153,195,
   126
YC 9012 DATA 254,245,187,221,175,215,235,
   127
CR 9013 DATA 60,30,62,107,255,239,255,126
XS 9014 DATA 126,251,241,209,251,255,239,
   126
QZ 9015 DATA 28,62,34,56,28,68,124,56
HI 9016 DATA 126,219,189,231,231,189,219,
   126
ZI 9017 DATA 254,235,245,187,221,175,215,
   127
BB 9018 DATA 60,30,62,107,255,255,255,126
AJ 9019 DATA 126,231,195,231,255,219,255,
   126
VL 9020 DATA 120,224,192,120,30,3,7,30
AB 9021 DATA 126,255,231,195,195,231,255,
   126
AZ 9022 DATA 254,215,235,245,187,221,175,
   127
BP 9023 DATA 60,30,62,107,255,247,255,126
XP 9024 DATA 126,223,143,139,223,255,247,
   126
VS 9025 DATA 96,192,192,222,123,3,3,6
BF 9026 DATA 126,231,195,129,129,195,231,
   126
ZL 9027 DATA 254,175,215,235,245,187,221,
   127
LB 9028 DATA 60,120,124,214,255,231,255,1
   26
SV 9029 DATA 126,247,255,223,139,143,223,
   126
XS 9030 DATA 0,96,206,219,219,115,6,0
SO 9031 DATA 60,120,124,214,255,131,199,1
   26
GN 9032 DATA 120,60,126,86,255,129,195,12
   6
AK 9033 DATA 60,30,62,107,255,193,227,126
UD 9034 DATA 60,120,92,214,255,231,195,12
   6
BI 9035 DATA 60,30,58,107,255,231,195,126
VU 9036 DATA 0,0,36,60,0,126,60,0
WS 9037 DATA 0,254,174,238,162,170,162,25
   4
HX 9038 DATA 255,143,175,143,255,255,255,
   255
NM 9039 DATA 255,255,255,255,255,255,255,
   255
NJ 9040 DATA 255,129,129,129,129,129,129,
   255
WO 9058 DATA 0,8,24,8,8,28,0,0
ZB 9059 DATA 0,28,4,28,16,28,0,0
TR 9060 DATA 0,28,4,28,4,28,0,0
IX 9061 DATA 0,20,20,28,4,4,0,0
XT 9062 DATA 0,28,16,28,4,28,0,0
ZN 9063 DATA 0,28,16,28,20,28,0,0
PT 9200 DATA 1,1,1,-1,1,0,0,0,-1,1,-1,-1,
   -1,0,0,0,0,1,0,-1,0,0
```

```
BS 9300 DATA 104,169,6,162,6,160,10,76,92
   ,228,216,165,5,10,10,10,24,105,48,141,
   2,208,141,3,208,166
NA 9301 DATA 7,160,0,152,157,0,158,157,0,
   159,232,200,192,8,208,244,165,6,10,10,
   10,24,105,32,133
BO 9302 DATA 7,170,160,0,185,56,154,157,0
   ,158,185,88,154,157,0,159,232,200,192,
   8,208,238
MW 9303 DATA 169,136,133,203,169,10,133,2
   04,173,244,2,141,9,212,173,196,2,141,2
   2,208,238,194,2
WL 9304 DATA 76,95,228
PK 9350 DATA 72,216,173,11,212,201,107,17
   6,30,141,10,212,165,203,24
WU 9351 DATA 105,240,141,23,208,133,203,1
   65,204,24,105,16,141,25,208,133,204,17
   3,11
QQ 9352 DATA 212,201,108,144,14,141,10,21
   2,169,56,141,2,208,173,244,2,141,9,212
   ,104,64,-1
ME 9401 DATA 708,COLOR 1
IZ 9402 DATA 1610,color ⊟
GW 9403 DATA 710,COLOR 3
RX 9404 DATA 1614,color O
TD 9405 DATA 712,BACKGROUND COLOR
UG 9500 DATA 32,12,60,12,35,13,66,13,63,0
   ,57,0
SJ 9800 DATA 14,35,36,38,39,42,43,50,52,5
   5
BB 9900 DATA 104,104,133,2,104,133,1,104,
   133,4,104,133,3,104,133,6,104,133,5,16
   0,0,240,16,177,1,145,3,230
VS 9901 DATA 1,208,2,230,2,230,3,208,2,23
   0,4,198,5,165,5,201,255,208,232,198,6,
   165,6,201,255,208,224,96
```

lesson 11: ATASCII, PEEK AND POKE

NEW OWNERS COLUMN

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LISTING 1

Don't type the TYPO II Codes!

```
XE 2 REM THE NEW OWNERS COLUMN
JO 4 REM BY DAVID PLOTKIN
PQ 6 REM (c) 1987, ANTIC PUBLISHING INC.
EE 8 POKE 106,PEEK(740):GRAPHICS 0
UB 10 DIM DAY$(21),M$(40),DY$(24),A$(1),F
   ILE$(15),LINE(25),PP$(40),HOLD$(257),F
   N$(14),SCR$(4500),JJ$(25),LL$(40)
DP 12 PRINT CHR$(125);"INITIALIZING..."
GK 15 SCREEN=PEEK(88)+256*PEEK(89)+40:FOR
    J=1 TO 23:LINE(J)=SCREEN:SCREEN=SCREE
   N+40:NEXT J:GOSUB 3100
ME 20 GOSUB 1000
DC 99 REM MAIN MENU SCREEN
IJ 100 TRAP 100:GRAPHICS 0:POKE 559,62:PO
   KE 53277,3:SETCOLOR 2,0,0:GOSUB 30000:
   POKE 82,0:INC=0
YH 110 PRINT :PRINT :PRINT "**MAIN MENU**
   ":PRINT :PP$=CHR$(18):PP$(40)=PP$:PP$(
   2)=PP$:PRINT PP$
ZF 120 PRINT " SELECT YOUR CHOICE (PRESS
   A LETTER)":PRINT PP$
FG 130 PRINT :PRINT "      NEW MONTH EDIT"
   :PRINT "      OLD MONTH EDIT":PRINT "
      SAVE DATA":PRINT "      CLEAR DATA"
HZ 140 PRINT "      ERASE MONTH (DISK)":PO
   KE 764,255:CLOSE #1:OPEN #1,4,0,"K:":G
   ET #1,J:A$=CHR$(J)
GE 150 IF A$="N" THEN 2000:REM GET NEW SC
   REEN
EI 160 IF A$="O" THEN 2200:REM EDIT OLD S
   CREEN
QI 170 IF A$="S" THEN 2400:REM SAVE CURRE
   NT DATA
AA 180 IF A$="C" THEN SCR$(1)=CHR$(0):SCR
   $(4500)=CHR$(0):SCR$(2)=SCR$:REM CLEAR
    THE DATA STRING
QR 190 IF A$="E" THEN 2800:REM DELETE A F
   ILE FROM DISK
ZP 195 PRINT CHR$(125):GOTO 110
BC 599 REM SCREEN EDITOR ROUTINE
BT 600 TRAP 100:CLOSE #1:OPEN #1,4,0,"K:"
   :POKE 82,0:POKE 752,0:POSITION 11,1:PR
   INT "→←";:POKE 764,255
TM 610 IF PEEK(764)=255 THEN GOTO 670:REM
    NO KEY PRESSED
HD 615 GET #1,K
DN 620 IF K=125 OR K=156 OR K=157 THEN PO
   KE 764,255:GOTO 670
SN 630 YY=PEEK(84):XX=PEEK(85)
PN 635 IF XX=39 THEN K=31
CD 640 IF (XX<11 AND (YY-1)/3=INT((YY-1)/
   3)) AND (K<28 OR K>31) THEN K=31
GM 645 IF (YY=1 AND K=28) OR (YY=22 AND (
   K=29 OR K=155)) THEN K=31
SX 650 PRINT CHR$(K);:GOTO 610
SL 670 BUTTON=PEEK(53279):IF BUTTON<>3 AN
   D BUTTON<>6 AND BUTTON<>5 THEN 610
ZS 680 RETURN
TR 699 REM WRITE DATA TO DISK
OE 700 CLOSE #1:OPEN #1,8,0,FILE$:PUT #1,
   M:PUT #1,INT(Y/256):PUT #1,Y-(INT(Y/25
   6))*256
EL 710 HI=17:LO=48:REM 4400 BYTES
AZ 720 POKE 850,11:POKE 856,LO:POKE 857,H
   I:GOTO 820
DX 799 REM READ DATA FROM DISK
SD 800 CLOSE #1:OPEN #1,4,0,FILE$:GET #1,
   M:GET #1,Y1:GET #1,Y2:Y=Y1*256+Y2
XK 810 POKE 850,7:POKE 856,255:POKE 857,2
   55
RT 820 NHI=INT(ADR(SCR$)/256):NLO=ADR(SCR
   $)-NHI*256
NT 830 POKE 852,NLO:POKE 853,NHI:DQ=USR(A
   DR("hhh⊠LV⊡"),16):CLOSE #1
ZM 840 RETURN
AB 899 REM DISK DIRECTORY
HW 900 CLOSE #1:OPEN #1,4,0,"K:":PRINT CH
   R$(125);"DRIVE #";:GET #1,X:FN$="D1:*.
   *":FN$(2,2)=CHR$(X)
MT 905 CLOSE #1:PRINT CHR$(X):OPEN #1,6,0
   ,FN$
HI 910 FOR X=1 TO 64:INPUT #1,FN$:FN$=FN$
   (3):IF FN$(3,12)="FREE SECTO" THEN 950

HA 920 IF X/2=INT(X/2) THEN POSITION 15,(
   X+1)/2:? FN$:GOTO 940
WE 930 POSITION 2,(X+2)/2:? FN$
MB 940 NEXT X
ZP 950 RETURN
ZY 999 REM INITIALIZING STRINGS
AK 1000 DAY$="SATSUNMONTUEWEDTHUFRI"
ER 1010 M$="JANFEBMARAPRMAYJUNJULAUGSEPOC
   TNOVDEC"
XA 1020 DY$="312831303130313130313031"
BK 1030 SCR$(1)=CHR$(0):SCR$(4500)=CHR$(0
   ):SCR$(2)=SCR$
KK 1040 RESTORE 1050:FOR LOOP=1 TO 25:REA
   D DT:JJ$(LOOP)=CHR$(DT):NEXT LOOP
FU 1050 DATA 104,104,133,204,104,133,203,
   104,133,207,104,133,206,160,0,177
FV 1060 DATA 206,145,203,200,192,220,208,
   247,96
```

continued on next page

```
YZ 1070 LL$="----------------------------
   --------------"
AX 1080 RETURN
JD 1999 REM GET MONTH
LS 2000 ? "INPUT DATE: MONTH,YEAR (XX,XXX
   X)":INPUT M,Y:D=1:IF M>12 OR M<1 THEN
   2000
FD 2010 IF M<3 THEN M=M+12:Y=Y-1
YE 2020 N=2*M+INT(0.6*(M+1))+Y+INT(Y/4)-I
   NT(Y/100)+INT(Y/400)+3
VV 2030 N=INT((N/7-INT(N/7))*7+0.05):Q=N
OT 2040 GOTO 5000
TM 2199 REM EDIT OLD MONTH
LL 2200 ? "DISK DIRECTORY? (Y OR N)":POKE
    764,255:CLOSE #1:OPEN #1,4,0,"K:":GET
    #1,J:A$=CHR$(J)
UG 2210 IF A$="Y" OR A$="y" THEN GOSUB 90
   0
EI 2230 ? "WHAT FILE TO EDIT":GOSUB 4000:
   REM GET FILENAME
BB 2240 IF FN$="" THEN 100
OX 2250 GOSUB 800:REM READ DATA FROM DISK

OJ 2260 GOTO 2010
NC 2399 REM SAVE CURRENT DATA
ZU 2400 FILE$="D:":FILE$(3)=M$(M*3-2,M*3)
   :FILE$(6)=STR$(Y)
XX 2410 GOSUB 700
NH 2420 GOTO 100
XI 2799 REM DELETE A FILE
LX 2800 ? "DISK DIRECTORY? (Y OR N)":POKE
    764,255:CLOSE #1:OPEN #1,4,0,"K:":GET
    #1,J:A$=CHR$(J)
VJ 2805 IF A$="Y" OR A$="y" THEN GOSUB 90
   0
EQ 2810 ? "WHAT FILE TO DELETE?":? :CLOSE
    #1:? "ENTER FILENAME OR PRESS":? "RET
   URN TO ABORT";:GOSUB 4000
NI 2820 IF FN$="" THEN 195
AC 2830 XIO 33,#3,0,0,FILE$:GOTO 195
QX 2999 REM PRINT CURRENT SCREEN
PO 3000 TRAP 600:POKE 752,1:PRINT "⊞⊞":CL
   OSE #1:OPEN #1,4,0,"P:":FOR J=1 TO 22
YC 3010 FOR I=1 TO 40:PP$(I)=HOLD$(PEEK(L
   INE(J)+I-1)+1):NEXT I:? #1;PP$
AC 3015 IF J/3=INT(J/3) THEN ? #1;LL$
SU 3020 NEXT J:FOR Q=1 TO 5:? #1:NEXT Q:C
   LOSE #1:GOTO 600
QE 3099 REM ARRAY TO CHANGE INTERNAL CHAR
   ACTERS TO ATASCII CHARACTERS
ZC 3100 FOR II=0 TO 255:IC=II:IV=0:IF IC>
   127 THEN IV=1:IC=IC-128
JC 3110 IF IC<64 THEN AC=IC+32+128*IV:GOT
   O 3140
SP 3120 IF IC<96 THEN AC=IC-64+128*IV:GOT
   O 3140
LJ 3130 AC=IC+128*IV
OK 3140 HOLD$(II+1)=CHR$(AC):NEXT II
QT 3199 REM INITIALIZE PLAYER/MISSILE GRA
   PHICS
VJ 3200 PMBASE=PEEK(106)-16:POKE 54279,PM
   BASE:PMBASE=PMBASE*256
RV 3210 FOR W=53256 TO 53259:POKE W,3:NEX
   T W:POKE 53260,255
SP 3220 POKE 88,0:POKE 89,PEEK(106)-16:?
   CHR$(125):GRAPHICS 0:SCREEN=PEEK(88)+2
   56*PEEK(89)+40
NH 3230 FOR W=PMBASE+807 TO PMBASE+987 ST
   EP 8:FOR J=0 TO 1024 STEP 256:POKE W+J
   ,255:NEXT J:NEXT W
MC 3240 FOR W=704 TO 707:POKE W,0:NEXT W:
   POKE 559,62:POKE 53277,3:POKE 623,1
LX 3250 RESTORE 3260:FOR I=53248 TO 53255
   :READ J:POKE I,J:NEXT I:RETURN
SA 3260 DATA 48,80,112,144,176,184,192,20
   0
CH 3999 REM HANDLE FILENAMES
VL 4000 INPUT FN$:IF FN$="" THEN RETURN
YU 4010 FOR J=1 TO LEN(FN$):IF FN$(J,J)="
   :" THEN POP :FILE$=FN$:RETURN
GM 4020 NEXT J:FILE$="D:":FILE$(3)=FN$:RE
   TURN
NM 4999 REM PUT WEEKS ON SCREEN, GET AND
   SAVE STRINGS OF DATA.
EH 5000 POKE 752,1:? CHR$(125):SETCOLOR 2
   ,7,4
TJ 5015 IF M>12 THEN M=M-12:Y=Y+1
CC 5300 DY=VAL(DY$(M*2-1,M*2))
YA 5305 IF M=2 THEN IF (Y/4=INT(Y/4) AND
   Y/100<>INT(Y/100)) OR Y/400=INT(Y/400)
    THEN DY=DY+1
SN 5310 GOSUB 7000:REM RECOVER STRING SCR
   EEN
ZY 5315 FOR LOOP=1 TO 7:POSITION 0,LOOP*3
   -2
AX 5316 IF LOOP+INC*7>DY THEN POSITION 0,
   LOOP*3-2:? "NOTES>>>";:POP :GOTO 5340
PC 5320 ? DAY$(Q*3+1,Q*3+3);" ";M$(M*3-2,
   M*3);" ";LOOP+INC*7;
PV 5325 Q=Q+1
UN 5327 IF Q=7 THEN Q=0
VQ 5330 NEXT LOOP
OL 5340 POSITION 0,23:? "  START=NEXT  SE
   LECT=PRINT  OPTION=MENU";
MJ 5350 GOSUB 600:REM SCREEN EDITOR ROUTI
   NE
MJ 5370 IF BUTTON=6 THEN GOSUB 6000:INC=I
   NC+1:IF INC=5 THEN INC=0:Q=N:REM PUT S
   CREEN IN STRING
FM 5380 IF BUTTON=6 THEN 5000
GY 5410 IF BUTTON=3 THEN GOSUB 6000:GOTO
   100:REM SAVE STRING, GOTO MENU
IP 5420 GOSUB 3000:GOTO 5350:REM BUTTON I
   S 5, PRINT SCREEN
LS 5999 REM PUT SCREEN DATA INTO STRING
RG 6000 POKE 752,1:? "⊞⊞":FOR LOOP=0 TO 3
   :INDEX1=880*INC+LOOP*220+1:INDEX2=SCRE
   EN+LOOP*220
JS 6010 DQ=USR(ADR(JJ$),ADR(SCR$(INDEX1))
   ,INDEX2)
VI 6020 NEXT LOOP
UK 6030 POKE 752,0:RETURN
CS 6999 REM PUT STRING DATA ONTO SCREEN
AG 7000 FOR LOOP=0 TO 3:INDEX1=880*INC+LO
   OP*220+1:INDEX2=SCREEN+LOOP*220
KH 7010 DQ=USR(ADR(JJ$),INDEX2,ADR(SCR$(I
   NDEX1)))
VJ 7020 NEXT LOOP
AO 7030 RETURN
CV 29999 REM DISABLE BREAK KEY
PY 30000 REM POKE 16,112:POKE 53774,112
DD 30010 RETURN
```

rate your writing—with 8-bit or ST

THE SAN FRANCISCO FOGGER

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LISTING 1

Don't type the TYPO II Codes!

```
LD 10 REM THE SAN FRANCISCO FOGGER
KZ 20 REM BY CHARLES JACKSON
BS 30 REM (c) 1987, ANTIC PUBLISHING INC.
JY 40 DEBUG=0:IF PEEK(53279)=5 THEN DEBUG
   =1
HN 50 DIM FN$(18),WORD$(40),T$(2)
```

```
XC 60 PERIOD=46:QMARK=63:EXCLAM=33:SEMI=59
NU 70 WCOUNT=0:TOTSYL=0:TRISYL=0:SENTENCE=0
PH 80 GRAPHICS 0:POKE 710,144:POKE 712,144:? "      The San Francisco Fogger"
XP 90 ? "            by Charles Jackson"
AH 100 TRAP 100:POSITION 2,9:? "▫File to process";:INPUT FN$
EQ 110 IF LEN(FN$)>3 THEN IF FN$(1,1)="D" AND (FN$(2,2)=":" OR FN$(3,3)=":") THEN 130
AH 120 WORD$=FN$:FN$="D1:":FN$(4)=WORD$
ZP 130 POSITION 2,11:? "▫Hard copy (Y/N) Y◆◆";:INPUT T$:IF  NOT (T$="Y" OR T$="N") THEN 130
MC 140 PRNTFLG=(T$="Y"):POKE 752,1
YR 150 CLOSE #1:OPEN #1,4,0,FN$:POSITION 2,9:? "▫▫▫▫Processing ";FN$
NP 160 GET #1,LTTR:GOSUB 490:LSAFE=LTTR
AJ 170 POKE 77,0:IF  NOT DEBUG THEN POKE 16,112:POKE 53774,112
WK 180 GOSUB 460:IF (PERFLAG) THEN 320
QN 190 WORD$="":OFFSET=1:TRAP 1010
YS 200 IF  NOT (ATEST) THEN 160
QP 210 REM
FL 220 WORD$(OFFSET,OFFSET)=CHR$(LTTR):OFFSET=OFFSET+1
NK 230 GET #1,LTTR:GOSUB 490:LSAFE=LTTR
WD 240 GOSUB 460:IF (PERFLAG) THEN 320
VW 250 IF (ATEST) THEN WORD$(OFFSET,OFFSET)=CHR$(LTTR):OFFSET=OFFSET+1:GOTO 230
QZ 260 REM
QY 270 POKE 53279,7:IF DEBUG THEN ? WORD$,
JK 280 WCOUNT=WCOUNT+1:LAST=LEN(WORD$):GOSUB 520:TOTSYL=TOTSYL+NUMSYL:LTTR=LSAFE
CY 290 IF NUMSYL-FOGFLAG>2 THEN TRISYL=TRISYL+1
NW 300 GOTO 160
QQ 310 REM
RD 320 IF LTTR=PERIOD THEN GOSUB 430
HE 330 IF  NOT ((LTTR=46 AND FINDVOW=1) OR (LTTR=33 OR LTTR=63 OR LTTR=59) AND LEN(WORD$)>1) THEN 360
KC 340 SENTENCE=SENTENCE+1:GOTO 270
QY 350 REM
OR 360 WCOUNT=WCOUNT+1:POKE 53279,7:IF DEBUG THEN ? WORD$,:? 1
OK 370 GOTO 160
RE 380 REM
AO 390 REM IS (LTTR) A VOWEL?
RN 400 VOWTEST=(LTTR=65) OR (LTTR=69) OR (LTTR=73) OR (LTTR=79) OR (LTTR=85) OR (LTTR=89)
LC 410 LTTR=LSAFE:RETURN
QT 420 REM
OC 430 FINDVOW=0:FOR X=1 TO LEN(WORD$):LTTR=ASC(WORD$(X,X)):GOSUB 400:IF VOWTEST=1 THEN FINDVOW=1
OA 440 NEXT X:LTTR=LSAFE:RETURN
QZ 450 REM
ZH 460 ATEST=((LTTR>=65 AND LTTR<=90) OR (LTTR>=48 AND LTTR<=57)):RETURN
RD 470 REM
MU 480 REM POP EVERYTHING INTO UPPER-CASE AND CHECK FOR ! . ? AND ;
KD 490 LTTR=USR(ADR("hhh▮A⊠▯)▬▮▮)▮▮▮▮"),LTTR)
KC 500 PERFLAG=(LTTR=46) OR (LTTR=33) OR (LTTR=63) OR (LTTR=59):RETURN
QS 510 REM
VY 520 FOGFLAG=0:NUMSYL=0
JA 530 TRAP 40000
DZ 540 M=1:WORD$(LAST+1,LAST+1)=" "
SR 550 IF M=LAST THEN 600
MB 560 LTTR=ASC(WORD$(M,M)):GOSUB 400:VTEST=VOWTEST
VL 570 LTTR=ASC(WORD$(M+1,M+1)):GOSUB 400
PR 580 IF (VTEST=1 AND VOWTEST=0) THEN NUMSYL=NUMSYL+1
ZA 590 M=M+1:GOTO 550
BN 600 IF LAST>3 THEN LTTR=ASC(WORD$(LAST,LAST)):GOSUB 400:NUMSYL=NUMSYL+VOWTEST
QT 610 REM
KB 620 IF NUMSYL=0 THEN NUMSYL=1
LA 630 IF LAST<4 THEN 690
JZ 640 LTTR=ASC(WORD$(LAST-1,LAST-1)):GOSUB 400:IF  NOT (VOWTEST=0 AND WORD$(LAST,LAST)="E") THEN 660
PE 650 NUMSYL=NUMSYL-1:IF WORD$(LAST-1,LAST-1)="L" THEN GOSUB 720
DV 660 LTTR=ASC(WORD$(LAST-2,LAST-2)):GOSUB 400
ST 670 IF VOWTEST=0 AND (WORD$(LAST-1,LAST)="ED" OR WORD$(LAST-1,LAST)="ES") THEN GOSUB 760
HZ 680 GOSUB 890:REM IO, YI/IA RULE
OY 690 IF DEBUG THEN ? NUMSYL
ZD 700 RETURN
UT 710 REM LE_RULE
BR 720 LTTR=ASC(WORD$(LAST-2,LAST-2)):T$=CHR$(LTTR):GOSUB 400
JZ 730 IF VOWTEST=1 OR LAST<3 THEN 750
EE 740 IF  NOT (T$="L" OR T$="R" OR T$="S") THEN NUMSYL=NUMSYL+1
ZN 750 RETURN
SJ 760 IF WORD$(LAST,LAST)<>"S" THEN 820
NX 770 T$=WORD$(LAST-2,LAST-2)
MQ 780 NUMSYL=NUMSYL-( NOT (T$="C" OR T$="G" OR T$="H" OR T$="S" OR T$="X" OR T$="Z"))
HX 790 IF LAST<5 THEN 820
TD 800 T$=WORD$(LAST-3,LAST-3):LTTR=ASC(T$):GOSUB 400:T$=WORD$(LAST-2,LAST-2)
XA 810 FOGFLAG=(VOWTEST=0 AND T$="L"):NUMSYL=NUMSYL+FOGFLAG
IB 820 IF WORD$(LAST,LAST)<>"D" THEN 860
NQ 830 T$=WORD$(LAST-2,LAST-2)
IL 840 IF  NOT (T$="D" OR T$="T") THEN NUMSYL=NUMSYL-1:GOTO 860
PB 850 FOGFLAG=1
RC 860 LTTR=ASC(WORD$(LAST-3,LAST-3)):GOSUB 400
QR 870 NUMSYL=NUMSYL+(VOWTEST=0 AND WORD$(LAST-2,LAST)="LED")
ZU 880 RETURN
HC 890 M=1
EP 900 T$=WORD$(M,M+1):IF M=LAST THEN 1000
WT 910 IF  NOT (T$="IO") THEN 980
CU 920 IF M=1 THEN NUMSYL=NUMSYL+1:GOTO 1000
EF 930 PV=ASC(WORD$(M-1,M-1)):XIT=0
GL 940 IF  NOT (PV=71 OR (PV>75 AND PV<79) OR PV=83 OR PV=84 OR PV=88 OR PV=90) THEN 970
MU 950 IF CHR$(PV)<>"L" THEN XIT=1
RF 960 IF M>2 THEN IF WORD$(M-2,M-1)="LL" THEN NUMSYL=NUMSYL-1
LG 970 IF XIT=0 THEN NUMSYL=NUMSYL+1
CD 980 IF T$="IA" OR T$="YI" THEN NUMSYL=NUMSYL+1
YJ 990 M=M+1:GOTO 900
ZZ 1000 RETURN
QS 1010 IF SENTENCE=0 THEN SENTENCE=1
WP 1020 IF WCOUNT=0 THEN WCOUNT=1
BY 1030 WPSENT=WCOUNT/SENTENCE
HZ 1040 SYL3SENT=TRISYL/SENTENCE
XS 1050 FOG=(WPSENT+SYL3SENT)*0.4+5.0E-03
QQ 1060 FOG=INT(FOG*100)/100
RY 1070 SMOG=SQR(30*SYL3SENT)+3
ES 1080 SMOG=INT(SMOG*100)/100
AT 1090 FLESCH=206-((WPSENT*1.015)+(0.846*(100*TOTSYL)/WCOUNT))
TZ 1100 FLESCH=INT(FLESCH*100)/100
KP 1110 IF FLESCH<0 THEN FLESCH=0
MG 1120 IF FLESCH>100 THEN FLESCH=100
SR 1130 POSITION 2,9:? "▫":POSITION 2,4:? FN$:?
HJ 1140 ? :? "   Fog =":POSITION (27-LEN(STR$(FOG))),7:? FOG
JP 1150 ? :? "   Smog =":POSITION (27-LEN(STR$(SMOG))),9:? SMOG
JQ 1160 ? :? "   Flesch =":POSITION (27-LEN(STR$(FLESCH))),11:? FLESCH
CK 1170 ? :? :? "   Word Count =":POSITION (27-LEN(STR$(WCOUNT))),14:? WCOUNT
GF 1180 ? :? "   Sentence Count =":POSITION (27-LEN(STR$(SENTENCE))),16:? SENTENCE:? :?
BL 1190 TRAP 40000:IF  NOT (PRNTFLG) THEN 1230
WJ 1200 LPRINT "The San Francisco Fogger":LPRINT :LPRINT FN$:LPRINT
AO 1210 LPRINT "Fog = ";FOG:LPRINT "Smog = ";SMOG:LPRINT "Flesch = ";FLESCH:LPRINT
PY 1220 LPRINT "Word Count = ";WCOUNT:LPRINT "Sentence Count = ";SENTENCE:LPRINT "*-------------------*":LPRINT
OH 1230 POKE 752,0
```

Article on page 20

THE SAN FRANCISCO FOGGER

LISTING 1

```
/*  The San Francisco Fogger     */
/*  By Charles Jackson           */
/*  (c) 1987, Antic Publishing   */
/*  Ver. 103186                  */

/*------------------ Alcyon Include file --------------------*/
#include        "osbind.h"

#define    TRUE              (1)
#define    FALSE             (0)
#define    CANCEL            (0)
#define    RETRY             (1)
#define    ERASE             (0)
#define    CREATE            (1)
#define    NO                (2)
#define    ALTERNATE         (8)
#define    ERROR            (-1)
#define    ONLINE           (-1)
#define    DOTS              (2)
#define    WHITE             (0)
#define    BLACK             (1)
#define    PRINTER           (0)
#define    begin             {
#define    end               }
#define    wend              }
#define    repeat            }
#define    next              }
#define    endif             }
#define    not               !
#define    then
#define    OR                ||
#define    AND               &&
#define    VOWEL             (1)
#define    CONSONANT         (0)
#define    FOURTH_TO_LAST (to_upper & word[ len_word - 4 ])
#define    THIRD_TO_LAST  (to_upper & word[ len_word - 3 ])
#define    NEXT_TO_LAST   (to_upper & word[ len_word - 2 ])
#define    THE_LAST       (to_upper & word[ len_word - 1 ])

/*--------------- Alcyon Declarations/Equates ---------------*/
int   contrl[ 12 ],
      intin[ 256 ],  ptsin[ 256 ],
      intout[ 256 ], ptsout[ 256 ],
      workin[]={ 1,1,1,1,1,1,1,1,1,1,2 }, workout[ 57 ],
      i, j, k, l, finished, gem_handle, character, resolution,
      x1, x2, xcen, xres, xcurr, y1, y2, ycen, yres, ycurr,
      color, max_color, key, v, idx, drive, sentence, word_count,
      file_handle, read_handle, read, len_word, buffer_count,
      bytes_read, number, button, found, letter=0,
      boxheight, fog_flag, alpha_test(), x_center(), vowel_test(),
      strcpy(), strcat(), strlen(), find_vowel(), num_syllables,
      tri_syllable, make_syllables(), to_upper=223, block[ 4 ],
      total_syllables, already_drawn, bar_length, char_width,
      char_height, debug_flag, home, mybox[ 10 ], okbox[ 10 ],
      printbox[ 10 ],
      window[]  = { 34,  80,  80,    37,  37,  74,
                   286, 560, 560,   173, 173, 346 },
```

```
        window1[] = { 36,  84,  84,    39,  39,  78,
                     284, 556, 556,   171, 171, 342 },

        bar[]     = { 80, 160, 160,   154, 154, 303,
                     240, 480, 480,   166, 166, 327 },

        expand[]  = { 17,  78, 278,  56,      /* low-res. parms. */
                     158,  71, 322,  66,      /* med-res. parms. */
                     158, 172, 322, 131 };    /* hi -res. parms. */

char  file_buffer[ 24576],
      path[100], filename[100], workname[100], numbuff[80], test[],
      sentalert[100], debug[200], word[60], ok[80], fog_msg[100],
      smog_msg[100], flesch_msg[100], word_msg[100], sent_msg[100],
      alert0[]       = "[0][| - The San Francisco Fogger - |][ Begin ]",
      alert3[]       = "[1][| Read another one? ][ Yes | No ]",
      alert5[]       = "[3][| Printer Offline! ][ Re-Try | Cancel ]",
      title[]        = "The San Francisco Fogger",
      author[]       = "By Charles Jackson",
      copyright[]    = "(c) 1987 Antic Publishing",
      le_letters[] = "LRS", es_letters[] = "CGHSXZ",
      io_letters[] = "GLMNSTXZ";

float fog, smog, flesch, wp_sentence, syllable3_per_sentence;

long max_len=24576, write_handle, write_bytes;

extern double sqrt();

/*--------------------------------------------------------------*/
main()
begin
      initialize();
      do begin
           read_the_file();
           if( button != CANCEL )then begin
                process_the_file();
                number_crunch();
                write_report();
           endif
           else finished=TRUE;
      repeat while( not finished );
      terminate();
end

/*--------------------------------------------------------------*/
initialize()
begin
      int sp;

      appl_init();
      gem_handle=graf_handle( &char_width, &char_height, &i, &i );
      v_opnvwk( workin, &gem_handle, workout );
      xres=workout[ 0 ]; yres=workout[ 1 ];
      resolution=Getrez(); drive=Dgetdrv();
      graf_growbox( (xres/2), (yres/2), 10, 10,
           expand[ resolution * 4 ], expand[ resolution * 4 + 1 ],
           expand[ resolution * 4 + 2], expand[ resolution * 4 + 3 ] );
      form_alert( 1, alert0 );
      finished=FALSE;
      read=0;
end

/*--------------------------------------------------------------*/
read_the_file()
begin
      buffer_count=0;
      path[ 0 ]=( drive+'A' ); path[ 1 ]=':';
      Dgetpath( &path[ 2 ], 0 );
      strcat( path, "\\*.*" );    filename[ 0 ]=0;
```

continued on next page

```
    fsel_input( path, filename, &button );
    if( button != CANCEL )then begin
        vq_key_s( gem_handle, &i );
        debug_flag=( i == ALTERNATE ) + 1;
        v_hide_c( gem_handle );
        strcpy( workname, path );
        truncate( workname );
        strcat( workname, filename );
        read_handle=Fopen( workname, read );
        if( read_handle > ERROR )then begin
            bytes_read=Fread( read_handle, max_len, file_buffer );
            file_buffer [ bytes_read ]='\0';
            drive=( path[ 0 ] - 'A' );
        endif
        Fclose( read_handle );
    endif
end

/*------------------------------------------------------------*/
process_the_file()
begin
    int i;

    sentence=word_count=tri_syllable=total_syllables=0;
    already_drawn=FALSE; draw_box( CREATE );
    v_hide_c( gem_handle );
    v_gtext( gem_handle, x_center( title ),
        ((int)(yres * 2/7 + 0.5)), title );
    v_gtext( gem_handle, x_center( author ),
        ((int)(yres * 3/7 + 0.5)), author );
    v_gtext( gem_handle, x_center( copyright ),
        ((int)(yres * 4/7 + 0.5)), copyright );
    v_gtext( gem_handle,x_center( filename ),
        ((int)(yres * 5/7 + 0.5)), filename );
    while( buffer_count <=bytes_read )begin
        make_word();
        if( buffer_count <=bytes_read )begin
            total_syllables += make_syllables();
            if(( num_syllables - fog_flag) > 2 )then tri_syllable++;
            word_count++;
            if( (( file_buffer[ buffer_count ] == '.')
                    AND  ( find_vowel( word ) == 1))
              OR  ( file_buffer[ buffer_count ] == '!')
              OR  ( file_buffer[ buffer_count ] == '?')
              OR  ( file_buffer[ buffer_count ] == ';')
                  /* Regard clause as sentence */
              AND ( len_word > 1 ) )
                 sentence ++;
        endif
    wend
end

/*------------------------------------------------------------*/
x_center( text )
/*  Accept a string and return "X" centering coordinate.     */
char *text;
begin
    return( (int)((xres - (( strlen( text )+1) * char_width ))/2) );
end

/*------------------------------------------------------------*/
find_vowel( the_word )
/* If there's a vowel in the word, return a "1".             *
 * otherwise, return a zero.                                 */
char *the_word;
begin
    int i, found=0;

    for( i=0; i<=strlen( the_word ) AND
            ( file_buffer[ buffer_count ] == '.' ); i++ )begin
```

```
        if( vowel_test( the_word[ i ] ) == VOWEL )then found=1;
    next
    return( found );
end

/*---------------------------------------------------------------*/
make_word()
/* Get characters and place it into word[] until a complete   *
 * word is formed.                                             */
begin
    idx=0; len_word=0;

    for( i=0; i<61; i++ ) word[ i ]=0;

    /* Find the first ASCII character */
    while( buffer_count <=bytes_read AND
           not ( alpha_test( file_buffer[ buffer_count ]]))begin
        draw_slider(); buffer_count++;
    wend

    /* Remove and put into word[]  */
    while( buffer_count <= bytes_read AND
           alpha_test( file_buffer[ buffer_count ]])begin
        draw_slider();      /* Update the slider bar */
        word[ idx++ ]=file_buffer[ buffer_count++ ];
        len_word++;
    wend
end

/*---------------------------------------------------------------*/
write_report()
begin
    boxheight=mybox[ 3 ] - mybox[ 1 ];
    v_hide_c( gem_handle ); draw_box( CREATE );
    v_gtext( gem_handle, x_center( title ),
        ((int)(boxheight * 1/9 + mybox[ 1 ] + 0.5)), title );
    v_gtext(gem_handle, x_center( filename ),
        ((int)(boxheight * 2/9 + mybox[ 1 ] + 0.5)), filename );

    box_make( " Fog Index: ", fog, 3, 2 );
        strcpy( fog_msg, sentalert );
    box_make( " Smog Index: ", smog, 4, 2 );
        strcpy( smog_msg, sentalert );
    box_make( " Flesch Index: ", flesch, 5, 2 );
        strcpy( flesch_msg, sentalert );
    box_make( " Word Count: ", (float)word_count, 6, 0 );
        strcpy( word_msg, sentalert );
    box_make( " Sentence Count: ", (float)sentence, 7, 0 );
        strcpy( sent_msg, sentalert );

    fence( "O.K.",(int)(xres/3 - 2*char_width),
        (int)(boxheight * 9/10 + mybox[ 1 ] + 0.5), okbox, 4 );
    fence( "Print",(int)(2*xres/3 - 3*char_width),
        (int)(boxheight * 9/10 + mybox[ 1 ] + 0.5), printbox, 4 );
    v_show_c( gem_handle, 0 );

    do vq_mouse( gem_handle, &button, &x1, &y1 );
        while( not ((((x1 > okbox[ 0 ]) AND (x1 < okbox[ 4 ])
                                        AND
                      (y1 > okbox[ 1 ]) AND (y1 < okbox[ 5 ]) )
            OR
                 ((x1 > printbox[ 0 ]) AND (x1 < printbox[ 4 ])
                                        AND
                  (y1 > printbox[ 1 ]) AND (y1 < printbox[ 5 ])))
            AND    ( button == 1 )));

    if( x1 > printbox[ 0 ] )then print_form();
    draw_box( ERASE );
    button=form_alert( 2, alert3 );
    if( button == NO )then finished=TRUE;
```

continued on next page

```
end

/*-----------------------------------------------------------*/
print_form()
begin
     lprint( title );
     if( button != 2 )then lprint( author );
     if( button != 2 )then lprint( copyright );
     if( button != 2 )then lprint( filename );
     if( button != 2 )then lprint( "\n" );
     if( button != 2 )then lprint( fog_msg );
     if( button != 2 )then lprint( smog_msg );
     if( button != 2 )then lprint( flesch_msg );
     if( button != 2 )then lprint( word_msg );
     if( button != 2 )then lprint( sent_msg );
     if( button != 2 )then lprint( "\n\n" );
end

/*-----------------------------------------------------------*/
alpha_test( letter )  /* Return 1 if char. is alpha-numeric. */
int letter;
begin
     return( ((letter>='A') AND (letter<='Z')) OR
             ((letter>='a') AND (letter<='z')) OR
             ((letter>='0') AND (letter<='9')) );
end

/*-----------------------------------------------------------*/
vowel_test( letter )          /* Return 1 if char. is vowel. */
char letter;
begin
     letter=(to_upper & letter);
     return( (letter == 'A' OR letter == 'E' OR letter == 'I' OR
              letter == 'O' OR letter == 'U' OR letter == 'Y')  );
end
/*-----------------------------------------------------------*/
make_syllables()           /* Break word[] into syllables and */
begin                      /* return the syllable count.      */
     fog_flag=letter=num_syllables=0;
     while (letter <= len_word)begin
          found=FALSE;
          while( vowel_test( word[ letter ] ) == CONSONANT
               AND letter <= len_word)  letter++;
              /* Ignore leading consonants */

          while( vowel_test( word[ letter ] ) == VOWEL
               AND letter <= len_word)then begin
               letter++;
               if( found == FALSE )then num_syllables++;
               found=TRUE;
          wend
     wend
     if(num_syllables > 1)then begin

          /*----- Check for silent "e" -----------*/
          if(( vowel_test( NEXT_TO_LAST ) == CONSONANT ) AND
               ( THE_LAST == 'E') )then begin
               num_syllables--;
               if( NEXT_TO_LAST == 'L' )then le_rule();
          endif

          /*----- Check  -es/-ed syllables ------*/
          if(( vowel_test( THIRD_TO_LAST ) == CONSONANT ) AND
               ( NEXT_TO_LAST == 'E' ) AND
               (( THE_LAST == 'S') OR ( THE_LAST == 'D')))
               then esed_rule();
     endif

     /*--- Check  -io/-yi syllables ---*/
     if( len_word > 2 )then begin
```

```
          io_rule(); yi_rule();
     endif
     if( num_syllables < 1 )then num_syllables=1;
     if( debug_flag == 2 )then see_debug( word, num_syllables );
     return( num_syllables );
end

/*-------------------------------------------------------------*/
le_rule()
/* Check for "-LE" syllables such as in "Title" and "Doodle" *
 * Key le_letters are L, R & S.                               */
begin
     int i, exit=FALSE;

     if( vowel_test( THIRD_TO_LAST )==CONSONANT AND len_word>2 )begin
          for( i=0; i<strlen( le_letters ); i++)begin
               if( THIRD_TO_LAST == le_letters[ i ] ) then exit=TRUE;
          next
          if( exit == FALSE )then num_syllables++;
     endif
end

/*-------------------------------------------------------------*/
esed_rule()
/* Check for  "-es" and "-ed" syllables such as in "faces"   *
 * and "Dudes".  Key es_letters are C, G, H, S, X & Z.        */
begin
     int i, suffix, exit=FALSE;

     if( THE_LAST == 'S' )then begin
          for( i=0; i<strlen( es_letters ); i++ )begin
               if( THIRD_TO_LAST == es_letters[ i ])then exit=TRUE;
          next
          if( exit == FALSE )then num_syllables--;
          if( len_word > 4 )then begin
               suffix=( vowel_test(FOURTH_TO_LAST) == CONSONANT
                                AND THIRD_TO_LAST == 'L');
               num_syllables += suffix;
               fog_flag=suffix;
          endif
     endif

   /*--- "-ed" check for words such as "Toted" and "Flapped" ---*/
     if( THE_LAST == 'D' )then begin
          if( not (( THIRD_TO_LAST == 'D')OR( THIRD_TO_LAST == 'T')))
               num_syllables--;
          else fog_flag=1;
     endif
end

/*-------------------------------------------------------------*/
io_rule()
/* Check for  "io" syllables such as in "action" and "ion".   *
 * Key  io_letters are G, L, M, N, S, T, X & Z.               */
begin
     int i, j, value, exit=FALSE;

     /*--- Search word for an "IO" pattern ---*/
     for( j=0; j<len_word-1; j++ )begin
          if((( to_upper & word[ j ]) == 'I' ) AND
             (( to_upper & word[ j+1 ]) == 'O' ))then begin

               /*--- Does word begin with "IO" ? ---*/
               if( j == 0 )then num_syllables++;
               else begin

                    /*--- Was prior letter a KEY letter ? ---*/
                    for( i=0; i<strlen( io_letters ); i++ )begin
                         value=( to_upper & word[ j-1 ] );
```

continued on next page

```
                    next
                    if( value == ( io_letters[ i ] ))begin
                        exit=( io_letters[ i ] != 'L' );

                        /* Check "-LLIO" patterns (like "Million") */
                        if( j > 2 )then begin
                            if((( to_upper & word[j-2]) == 'L') AND
                               (( to_upper & word[j-1]) == 'L'))
                                num_syllables--;
                        endif
                    endif
                    if( exit == FALSE )then num_syllables++;
                endif
            endif
    next
end

/*-----------------------------------------------------------*/
yi_rule()                  /* Check for  "yi/ia" syllables such  */
begin                      /* as in "flying" and "phobia".       */
    int j;

    for( j=0; j<len_word-1; j++ )begin
         /*--- Search for a "YI" pattern.  ---*/
        if(((( to_upper & word[ j ] ) == 'Y') AND
            (( to_upper & word[ j+1 ]) == 'I'))
                        OR
         /*--- Search for an "IA" pattern. ---*/
           ((( to_upper & word[ j ] ) == 'I') AND
            (( to_upper & word[ j+1 ]) == 'A'))) then num_syllables++;
    next
end

/*-----------------------------------------------------------*/
number_crunch()                 /* Calculate Fog, Smog & Flesch  */
begin
    if( sentence == 0 ) sentence++;
    if( word_count == 0 ) word_count++;
    wp_sentence=(float)( word_count )/(float)( sentence );
    syllable3_per_sentence=(float)( tri_syllable )/(float)( sentence );
    fog   =( wp_sentence + syllable3_per_sentence ) * 0.4 + 0.005;
    smog  =sqrt( 30 * syllable3_per_sentence ) + 3;

    flesch=206.835 -   (( wp_sentence * 1.015 )
        +(0.846 * (100 * (float)total_syllables) / (float)word_count));
    if( flesch < 0 )then flesch=0;
    if( flesch > 100 )then flesch=100;
end

/*-----------------------------------------------------------*/
draw_box( choice )     /* ERASE=0, CREATE=1  */
int choice;
begin
    int offset, action;

    v_hide_c( gem_handle ); action=0;
    if( choice == ERASE ) action=( resolution == 2 ) + 1;
    vsf_interior( gem_handle, action );
    vsf_style( gem_handle, 4);
    vsf_color( gem_handle, 3 - (2 * choice) );
    vsf_perimeter( gem_handle, choice );
    for( offset=0; offset < 4; offset ++ )
        mybox[ offset ]=window[ offset * 3 + resolution ];
    v_bar( gem_handle, mybox );
    if( choice == ERASE )then v_show_c( gem_handle, 0 );
    else begin
        vsf_interior( gem_handle, action );
        for( offset=0; offset < 4; offset ++ )
            block[ offset ]=window1[ offset * 3 + resolution ];
        v_bar( gem_handle, block );
```

```
     endif
end

/*-----------------------------------------------------------------*/
draw_slider()
begin
     int slider, offset, line[ 3 ];

     if( buffer_count <=bytes_read )begin
          if( not already_drawn )then begin
               vsf_interior( gem_handle, WHITE );    /* Draw a     */
               vsf_color( gem_handle, BLACK );       /* white bar */
               vsf_perimeter( gem_handle, TRUE );    /* once.      */
               for( offset=0; offset < 4; offset ++ )
                    block[ offset ]=bar[ offset * 3 + resolution ];
               bar_length=( block[ 2 ] - block[ 0 ] ) - 1;
               v_bar( gem_handle, block );
               already_drawn=TRUE;   home= ++block[ 0 ];
               block[ 1 ]++;   block[ 3 ]--;
          endif
          slider=bar_length*((float)(buffer_count)/(float)(bytes_read));
          block[ 2 ]=slider + home;
          vsl_color( gem_handle, BLACK ); vsl_width( gem_handle, 1 );
          vsf_interior( gem_handle, 2 );  vsf_style( gem_handle, 2 );
          vsf_color( gem_handle, BLACK ); vsf_perimeter( gem_handle, 0 );
          v_bar( gem_handle, block );

          line[ 0 ]=block[ 2 ]; line[ 1 ]=block[ 1 ];
          line[ 2 ]=block[ 2 ]; line[ 3 ]=block[ 3 ];
          v_pline( gem_handle, 2, line );
          block[ 0 ]=block[ 2 ];
     endif
end

/*-----------------------------------------------------------------*/
box_make( string, value, offset, dec_point )
/* Build report box.                                              *
 * Form:     box_make ( "Fog Index: ", fog, 3, 2 );               */
char *string;
int offset, dec_point;
float value;
begin
     sentalert[ 0 ]='\0'; strcpy( sentalert, string );
     ftoa( (value + 0.0005), numbuff, dec_point );
     if( dec_point == 0 )then numbuff[ strlen( numbuff ) -1 ]='\0';
     j=25 - ( strlen( numbuff ) + strlen( string ) );
     for( i=1; i < j; i++ ) strcat( sentalert, " " );
     strcat( sentalert, numbuff );
     v_gtext( gem_handle, x_center( sentalert ),
          ((int)(( boxheight * offset )/9 + mybox[ 1 ] + 0.5 )),
          sentalert);
end

/*-----------------------------------------------------------------*/
fence( string, xpos, ypos, corners, width )
/* Print a character string at (X,Y), draw a box around it       */
/* and put the box coordinates into corners[].                   */
char *string;
int xpos, ypos, corners[9], width;
begin
     v_gtext( gem_handle, xpos, ypos, string );
     corners[ 0 ]=xpos - char_width;
     corners[ 1 ]=ypos - char_height * 1.11;
     corners[ 9 ]=corners[ 3 ]=corners[ 1 ];
     corners[ 2 ]=corners[ 0 ] + (strlen( string ) + 2 ) * char_width;
     corners[ 4 ]=corners[ 2 ];
     corners[ 5 ]=corners[ 7 ]=corners[ 1 ] + char_height * 1.5;
     corners[ 8 ]=corners[ 6 ]=corners[ 0 ];
     corners[ 9 ]-=( resolution != 1);
     vsl_width( gem_handle, width );
```

continued on next page

```
     v_pline( gem_handle, 5, corners );
end

/*------------------------------------------------------------------*/
lprint( string )
/* Make sure printer is online, print the string, end with     *
 * <cr> & <lf>.                                                  */
char *string;
begin
     int i=0, j=0, status=0;

     button=1;
     do begin
          for( j=0; j<256 AND status != ONLINE; j++ )
               status=Bcostat( PRINTER );
          if( status != ONLINE ) button=form_alert( 1, alert5 );
     repeat while ( status != ONLINE AND button == RETRY );

     if( button != 2 )then begin
          while( string[ i ] != '\0' ) Bconout( PRINTER, string[ i++] );
          Bconout( PRINTER, '\r' ); Bconout( PRINTER, '\n' );
     endif
end

/*------------------------------------------------------------------*/
strlen( string )
/* Returns the length of a character string.                    */
char *string;
begin
     int length;

     for( length=0; *string != '\0'; string++) length++;
     return( length );
end

/*------------------------------------------------------------------*/
strcat( body, tail )
/* Append "tail" string to "body" string, return new length. */
char *body, *tail;
begin
     int newlength=0;

     while ( *body )begin
          *body++; newlength++;
     wend
     while ( *body++ = *tail++ ) newlength++;
     return( newlength );
end

/*------------------------------------------------------------------*/
strcpy( destination, source )
/* Copy Source string to Destination string, return length.  */
char *destination, *source;
begin
     int length=0;

     while ( *destination++ = *source++ ) length++ ;
     return( length );
end

/*------------------------------------------------------------------*/
truncate( string )
/* Strips off highest level in the path.                         */
char *string;
begin
     int x;

     for( x=strlen( string ); x>=0; --x )begin
          if( string[x] == 92 ) break;
     next
     string[x+1]=0;
```

```
end

/*-----------------------------------------------------------------*/
see_debug( string, value )
/* Builds form_alert with var_name & value in it.                 */
char *string;
int value;
begin
      int factor, length=0;

      for( i=0; i<75; i++ )begin
            numbuff[ i ]=0; debug[ i ]=0;
      next
      factor = (int)(( 14-strlen( string ))/2 + 0.5 );
      if( factor < 0 ) then factor=0;
      strcpy( debug, "[1][ " );
      for( i=0; i< factor; i++ )strcat( debug, " " );
      strcat( debug, string );
      length=strcat( debug, " = " );
      ftoa( (float)(value), numbuff, 5);
      i=0;
      while (( i<5 ) AND ( numbuff[ i ] != '.'))
            debug[ length + i ]=numbuff[ i++ ];
      for( i=0; i< factor; i++ )strcat( debug, " " );
      strcat( debug, " ][ OK | Cancel ]\0" );
      v_show_c( gem_handle, 0 );
      debug_flag= 3 - form_alert (1, debug);
      v_hide_c( gem_handle );
end

/*-----------------------------------------------------------------*/
terminate()
begin
      graf_shrinkbox( (xres/2), (yres/2), 10, 10,
      expand[ resolution * 4 ], expand[ resolution * 4 + 1 ],
      expand[ resolution * 4 + 2], expand[ resolution * 4 + 3 ] );
      v_clsvwk( gem_handle );
      appl_exit();
end
```

ST RESOURCE

PRINTSET

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LISTING 1

```
*
* Printset!  By Brad Robillard  (c) 1986 Antic Publishing
*
*-----------------------------

printer    equ   5
quit       equ   0
GEMDOS     equ   1

*-----------------------------
      text
start
      lea         pcodes,a6        Point a6 to list of codes.
continue
```

continued on next page

```
        tst         (a6)                Are we at the end of the list?
        beq         done                Branch if we are.

        move.w      (a6)+,-(SP)         Otherwise move character onto stack.
        move.w      #printer,-(SP)      Move character destination onto stack.
        trap        #GEMDOS             Actually output the character.

        add.l       #4,SP               Correct stack for bytes pushed.
        tst         d0                  Was there a printer error?
        bne         continue            Branch if not for next character.
done
        move.w      #quit,-(SP)         Move terminate opcode onto stack.
        trap        #GEMDOS             CP/M Terminate Application call.

        add.l       #2,SP               Hope we never get here
        rts                             But just in case!

*-------------------------------
pcodes
        dc.w        27, 64, 0           Reset code for Epsons -> ESC @
        end
```

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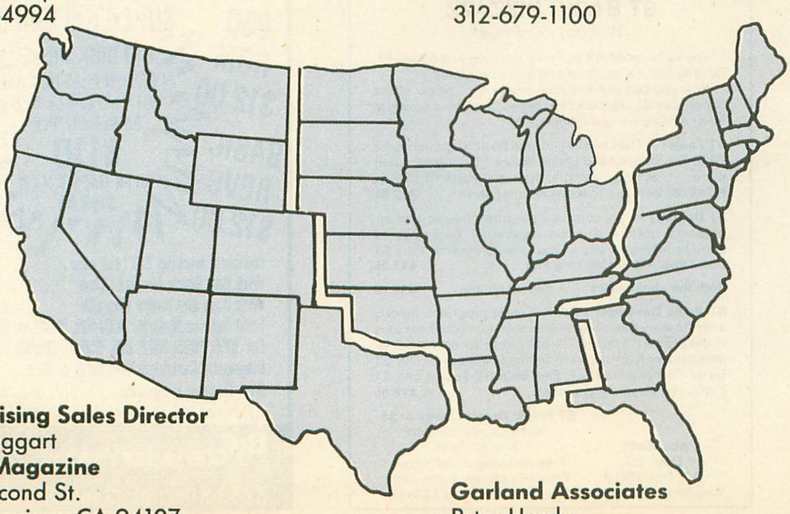
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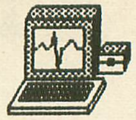
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BY BILL MARQUARDT, ANTIC TECHNICAL ASSISTANT

ROTATE

This short routine flips your Atari's character sideways! FLIPPER.BAS was written by Mark Brown in the October, 1986 issue of Current Notes, the publication of the Washington Area Atari Computer Enthusiasts. (See the article about WAACE elsewhere in this issue.)

Lines 10 through 40 contain the flipping routine and lines 70 to 90 contain a sample program demonstrating the routine.

```
10 C=0:DIM A$(72):FOR A=1 TO 72:READ B:C=C+A*B:A$(A,A)=
CHR$(B):NEXT A:IF C<>353341 THEN ? "DATA ERROR! ! !":STOP
20 DATA 104,104,133,213,104,133,212,169,0,160,7,153,217,0,1
36,16,250,169,1,133,214,169,7,133,216,164,216,177
30 DATA 212,133,215,160,7,169,128,36,215,208,21,74,136,16,2
48,6,214,198,216,16,232,160,7,185,217,0,145,212,136
40 DATA 16,248,96,72,185,2317,0,5,214,153,217,0,104,208,233
50 REM SUBROUTINE ABOVE:SAMPLE PROGRAM BELOW
70 ? CHR$(125);"Please wait. . .":FOR B=0 TO 3:FOR A=0 TO
31:POKE PEEK (88)+256*PEEK(89)+4C*B+A+404,32*B+A:NEXT A
80 NEXT B:DIM F$(2048):A=INT(ADR(F$)/1024)*1024:A=A+102
*(A<ADR(F$)):POKE 756,A/256:FOR B=0 TO 511
90 POKE A+B,PEEK(57344+B):POKE A+B+512,PEEK(A+B):NEXT B:
FOR B=0 TO 63:JUNK=USR(ADR(A$),512+A+8*B):NEXT B
```

If you have a Tech Tip that you would like to share with other readers, send it along to Antic Tech Tips, 524 Second Street, San Francisco, CA 94107. You might get your name in print. We always welcome very short programs that demonstrate the Atari's powers, simple hardware modifications, or useful macros for popular software.

VARIABLE LISTER

William Schellhaas of Brooklyn, New York, submits this quick and easy variable lister. If you want to print a hard copy of your variable list, just remove the word REM from line 31605.

```
31600 VARLST=PEEK(130)+PEEK(131)*256
31601 LSTVAR=PEEK(132)+PEEK(133)*256
31602 FOR XXX=VARLST TO LSTVAR-1
31603 CH=PEEK(XXX)
31604 IF CH>127 THEN ? CHR$(CH-128):GOTO 31607
31605 REM POKE 838,166:POKE 839,238
31606 ? CHR$(CH);
31607 NEXT XXX
```

I/O CONTROL BLOCK

This short BASIC program demonstrates one of the quickest ways to read and write to a disk file. You can use it in your own BASIC programs to rapidly load and save character sets, Player/Missile data, or even graphics.

Before using this routine, you must define a buffer—a chunk of memory which holds the data to be written to (or read from) the disk. A character string makes a good buffer.

Next, you must tell your Atari where to find your buffer, how many bytes you want to transfer, and whether you'll be reading or writing to the disk. Convert the address of the buffer and the number of bytes to transfer into low-bytes and high-bytes. Place the address bytes into the variables BUFFADDRLO and BUFFADRHI. Place the remaining two values into BUFFLENLO and BUFFLENHI. Use the variable CMD to tell the routine to read from the disk (CMD=7) or write to it (CMD=11).

See SLIDES.BAS, the 130XE Slide Show program in this issue, for an example of using this routine to load and save graphics screens to disk.

```
100 IOCB1=848:REM FILE
LOADER/SAVER
110 DIM ML$(7):FOR I=1 TO 7
120 READ D:ML$(I,I)=CHR$(D):
NEXT D
130 REM CMD: READ=7;
WRITE=11
140 OPEN #1,4,0,"D:MY FILE"
150 POKE IOCB1+2,CMD
160 POKE IOCB1+4,BUFFADDRLO
170 POKE IOCB1+5,BUFFADDRHI
180 POKE IOCB1+8,BUFFLENLO
190 POKE IOCB1+9,BUFFLENHI
200 X=USR(ADR(ML$),16)
210 CLOSE #1
220 DATA 104,104,104,170,76,86,
228
```

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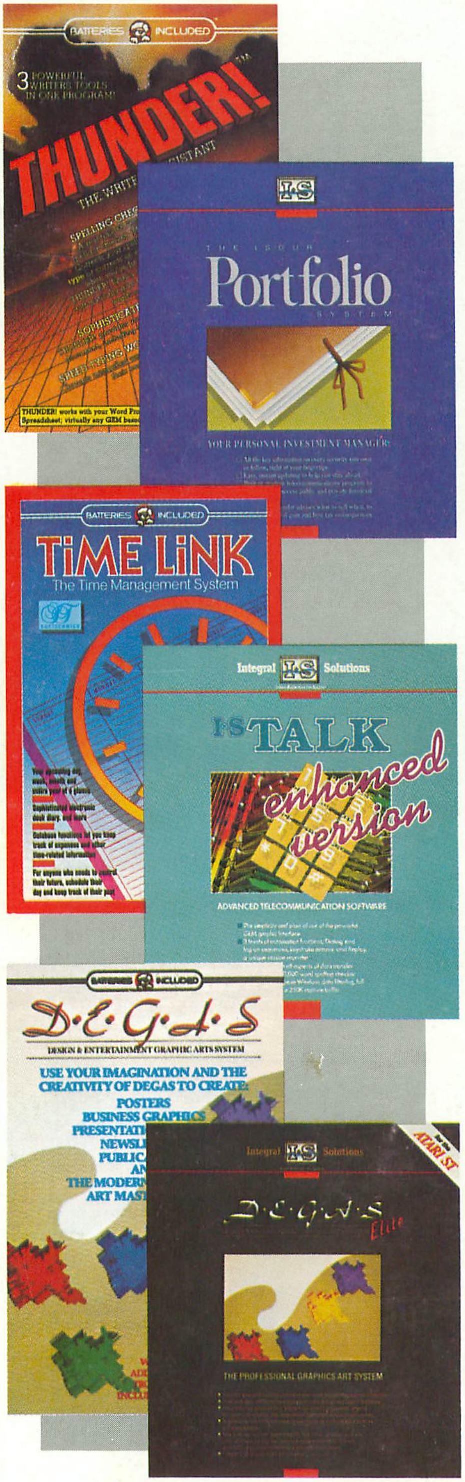
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